US Army Corps
Of Engineers
Albuquerque District

ENVIRONMENTAL ASSESSMENT
FOR A
TEMPORARY DEVIATION IN THE OPERATION
OF COCHITI DAM, SANDOVAL COUNTY, NEW MEXICO

April, 25 2007

U.S. Army Corps of Engineers
Albuquerque District
4101 Jefferson Plaza NE
Albuquerque, New Mexico 87109

CONVERSION FACTORS

	From	Multiplier	To
Length	inches	25.4	millimeters
	feet	0.3048	meters
	miles	1.6093	kilometers
Area	acres	0.0407	hectares
	square miles	2.590	square kilometers
Volume	cubic yards	0.7646	cubic meters
	acre-feet	1,613.33	cubic yards
	acre-feet	1,233.5	cubic meters
	acre-feet	325,851	gallons
Flow	cubic feet/second (cfs)	0.0283	cubic meters/second
	cubic feet/second (cfs)	1.983	acre-feet/day
Mass (weight)	tons (short ton)	0.9072	metric tons
Velocity	feet/second (fps)	0.3048	meters/second
Salinity	µSiemens/cm or µmhos/cm	0.32379	parts/million NaCl or mg/liter NaCl
Temperature	° Fahrenheit (°F)	(°F-32)/1.8	° Celsius (°C)

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US Army Corps
Of Engineers
Albuquerque District

FINDING OF NO SIGNIFICANT IMPACT

TEMPORARY DEVIATION IN THE OPERATION OF COCHITI DAM, SANDOVAL COUNTY, NEW MEXICO

The Rio Grande silvery minnow (*Hybognathus amarus*) was listed as endangered by the U.S. Fish and Wildlife Service (Service) in July 1994. The silvery minnow currently occurs only within the 160-mile reach of the Rio Grande from Cochiti Dam to Elephant Butte Lake in New Mexico. In 2003, the U.S. Army Corps of Engineers (Corps) and the U.S. Bureau of Reclamation (Reclamation) formally consulted with the Service pursuant to Section 7 of the Endangered Species Act regarding the continued operation of dams within the Middle Rio Grande valley of New Mexico. In March 2003, the Service issued the *Biological and Conference Opinions on the Effects of Actions Associated with the Programmatic Biological Assessment of Bureau of Reclamation's Water and River Maintenance Operations, Army Corps of Engineers' Flood Control Operation, and Related Non-Federal Actions on the Middle Rio Grande, New Mexico*. The Reasonable and Prudent Alternative of the Biological Opinion requires, in part, that the Corps and Reclamation, annually provide an increase in flow to cue spawning of the Rio Grande silvery minnow, if needed. Successful spawning and the subsequent recruitment of young into the adult population is essential to the survival and recovery the silvery minnow.

Since it was listed 1994, the silvery minnow population gradually declined through 2003, but recently has increased in response to sustained flows of both moderate and exceptional discharge in the Middle Rio Grande. In March 2007, the Engineer Advisers to the Rio Grande Compact Commission requested that the Corps be prepared to deviate from normal operation of its reservoirs to facilitate a spawning and recruitment flow for the silvery minnow in the Middle Rio Grande during the spring of 2007, if needed.

The Corps is proposing to implement a temporary deviation from its water control plan for the Cochiti Dam and Lake Project to facilitate spawning and recruitment flows for the silvery minnow. The Project is located in Sandoval County, New Mexico, and was authorized for flood and sediment control, recreation, and development of fish and wildlife resources. All Project facilities and a major portion of the flood control pool lie within the bounds of the Pueblo de Cochiti. The duration of the planned deviation is from late April through June 15, 2007. The Pueblo de Cochiti and the Rio Grande Compact Commission has provided to the Corps their written consent to the proposed deviation. Prior to implementation, the planned deviation would require the approval of the Corp's South Pacific Division.

The proposed action entails the temporary (less than 2 months) storage of up to 10,000 acre-feet of native Rio Grande flow in Cochiti Lake. Storage of water would begin approximately May 2, 2007. All or part of the detained water would be released to facilitate recruitment flows in the Rio Grande downstream to Elephant Butte Lake during mid-May through early June. Any remaining detained water would be released from the reservoir no later than June 15 to assure its downstream delivery to Elephant Butte Lake. The surface water level of Cochiti Lake would increase up to seven feet during storage. The timing, duration, and magnitude of storage for the proposed action is similar to past flood control storage operation at Cochiti Dam since 1974. No significant or unusual effects on the resources in the action area are foreseen.

Under the no-action alternative, temporary storage of native Rio Grande water at Cochiti Lake for later release to facilitate downstream recruitment flows would not occur. The dam would be operated to safely pass inflow according to the existing water control plan. The change in surface elevation of the lake would be less then two feet. Reclamation acquires and maintains a pool of Supplemental Water that is

used to meet flow requirements of the 2003 Biological Opinion for water operations, for requirements to control the rate of river recession, and, if needed, for a flow spike to trigger silvery minnow spawning. The need for a spawning flow would be determined by the Service in consultation with Reclamation and the Corps. The no-action alternative would have no significant effect on the human environment of the affected area.

The proposed action would result in only minor and temporary impacts to resources in the action area. The following elements have been analyzed and would not be significantly affected by the proposed action: socioeconomic environment, air quality, water quality, noise levels, recreation, flood plains, riparian areas, wetlands, waters of the United States, biological resources, endangered and threatened species, prime and unique farmland, cultural resources, and Indian trust assets.

The proposed action has been fully coordinated with Federal, tribal, and local governments with jurisdiction over the ecological, cultural, and hydrologic resources in the affected area. Based upon these factors and others discussed in detail in the Environmental Assessment, the planned action would not have a significant effect on the human environment. Therefore, an Environmental Impact Statement will not be prepared for the conduct of this planned deviation from the water control plan of the Cochiti Dam and Lake Project.

27 APR 07
Date

B.A. Estok
Lieutenant Colonel, U.S. Army
District Commander

CERTIFICATION OF LEGAL REVIEW

The *Environmental Assessment for a Temporary Deviation in the Operation of Cochiti Dam, Sandoval County, New Mexico*, including all associated documents required by the National Environmental Policy Act, has been fully reviewed by the Office of Counsel, Albuquerque District, and is approved as legally sufficient.

M. LeeAnn Summer
Acting District Counsel

26 April 07
Date

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ENVIRONMENTAL ASSESSMENT FOR A TEMPORARY DEVIATION IN THE OPERATION OF COCHITI DAM, SANDOVAL COUNTY, NEW MEXICO

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1. BACKGROUND, PURPOSE AND NEED

The U.S. Army Corps of Engineers, Albuquerque District (Corps) is proposing a temporary deviation from its normal flood control operation at the Cochiti Dam and Lake Project, Sandoval County, New Mexico. This planned deviation from the current water control plan would entail the temporary (less than 2 months) storage of up to 10,000 acre-feet of native Rio Grande flow in this main stem reservoir. Storage of water would begin approximately May 2, 2007. All or part of the detained water would be released to facilitate spawning of the federally endangered Rio Grande silvery minnow (*Hybognathus amarus*) in the Rio Grande downstream to Elephant Butte Lake during mid-May through early June. Any remaining detained water would be released from the reservoir no later than June 15. Therefore, the duration of the planned deviation is expected to be from late April through June 15, 2007.

The Rio Grande silvery minnow was listed as endangered by the U.S. Fish and Wildlife Service (Service) in July 1994 (USFWS 1994). Historically, the silvery minnow occupied the Rio Grande and Pecos rivers from north-central New Mexico downstream to the Gulf of Mexico. Currently the minnow occurs only within the approximately 160-mile reach of the Rio Grande from Cochiti Dam to Elephant Butte Lake.

In 2003, the Corps and the U.S. Bureau of Reclamation (Reclamation) formally consulted with the Service pursuant to Section 7 of the Endangered Species Act regarding the continued operation of dams within the middle Rio Grande valley of New Mexico. In March 2003, the Service issued the *Biological and Conference Opinions on the Effects of Actions Associated with the Programmatic Biological Assessment of Bureau of Reclamation's Water and River Maintenance Operations, Army Corps of Engineers' Flood Control Operation, and Related Non-Federal Actions on the Middle Rio Grande, New Mexico* (USFWS 2003a). The Reasonable and Prudent Alternative of the Biological Opinion requires, in part, that the Corps and Reclamation, annually provide an increase in flow to cue spawning of the Rio Grande silvery minnow, if needed. Flow increases for spawning were provided by Reclamation in 2002 and 2003 through the use of purchased water.

Since it was listed as endangered in 1994, the silvery minnow population gradually declined through 2003—a period that included an extended drought in New Mexico. During 2004 and 2005, the population increased nearly to its size at the time of listing in response to sustained flows of both moderate and exceptional discharge in the middle Rio Grande (see Section 3.07). In 2006, despite the relatively high population levels, spawning and the subsequent development of young fish were poor, and the population index decreased by nearly a magnitude (Dudley and Platania 2007). Successful spawning and the recruitment of young into the adult population is needed in 2007 (and subsequent years) to avoid jeopardizing the continued existence of the Rio Grande silvery minnow.

The Cochiti Dam and Lake Project was authorized for flood and sediment control, recreation, and development of fish and wildlife resources by Public Laws 86-645 and 88-293 (see Appendix A). Deviations in flood control operation require approval of the Rio Grande Compact Commission (Commission). In March 2007, the Engineer Advisers of the Commission requested the Corps to be prepared to deviate from normal operations of it's reservoirs to provide spawning and recruitment flow for the minnow in 2007, if needed (see Appendix B).

Regulatory Compliance

This Environmental Assessment was prepared by the U.S. Army Corps of Engineers, Albuquerque District, in compliance with all applicable Federal statutes, regulations, and Executive Orders, including:

· National Environmental Policy Act (NEPA) of 1969 (42 U.S.C. 4321 *et seq*.);
· Regulations for Implementing the Procedural Provisions of NEPA (40 CFR 1500 *et seq*.);
· U.S. Army Corps of Engineers' Procedures for Implementing NEPA (33 CFR 230);
· Clean Air Act, as amended (42 U.S.C. 7401 *et seq*.);
· Clean Water Act of 1977, as amended (33 U.S.C. 1251 *et seq*.);
· Endangered Species Act, as amended (16 U.S.C. 1531 *et seq*.);
· Floodplain Management (Executive Order 11988);
· Protection of Wetlands (Executive Order 11990).
· Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations (Executive Order 12898);
· Archaeological Resources Protection Act, 16 U.S.C. 470aa *et seq*.
· National Historic Preservation Act, as amended (16 U.S.C. 470 *et seq*.);
· Protection of Historic and Cultural Properties (36 CFR 800 *et seq*.);
· Protection and Enhancement of the Cultural Environment (Executive Order 11593);
· American Indian Religious Freedom Act (42 U.S.C. 1996); and
· Native American Graves Protection and Repatriation Act of 1990 (25 U.S.C. 3001 *et seq*.).

This document and associated analyses have been coordinated with the Pueblo de Cochiti. For those portions of the proposed action potentially affecting non-tribal lands, this document also reflects compliance with applicable State of New Mexico regulations and standards for water quality, as well as regulations conserving endangered plants and animals.

2. DESCRIPTION OF THE PROPOSED ACTION AND ALTERNATIVES

2.01. BACKGROUND: STREAMFLOW FORECAST

A brief discussion of streamflow conditions is included here to clarify both the no-action and proposed action alternatives. [Note: The draft Environmental Assessment evaluated the need for recruitment flows based on the March 1 forecast of March-July streamflow volume (504,000 acre-feet). The following updates the expected streamflow with the April 1 forecast of 470,000 acre-feet.]

To determine the potential need for additional water to augment native flows, the Corps used the Riverware-based reservoir-routing model developed by the Upper Rio Grande Water Operations Modeling (URGWOM) Team to evaluate current streamflow forecasts for the Middle Rio Grande using the April 1, 2007, forecast from the Natural Resources Conservation Service. (See Appendix C for the April 1 forecast and details of all modeling assumptions.) Given the conditions predicted for the 2007 snowmelt runoff, modeling results show that the peak discharge from Cochiti Dam would be approximately 2,800 cfs. Figure 1 depicts the predicted flow at the Albuquerque, San Acacia, and San Marcial gauges downstream from Cochiti Dam. The flow at Albuquerque is predicted to be 2,000 cfs for seven contiguous days. Flows at San Marcial are expected to be at 1,500 cfs or more for about six days. Analysis of Rio Grande silvery minnow recruitment response to spring runoff indicates that the predicted streamflow meets the minimum requirement for successful spawning and recruitment (see Section 3.07).

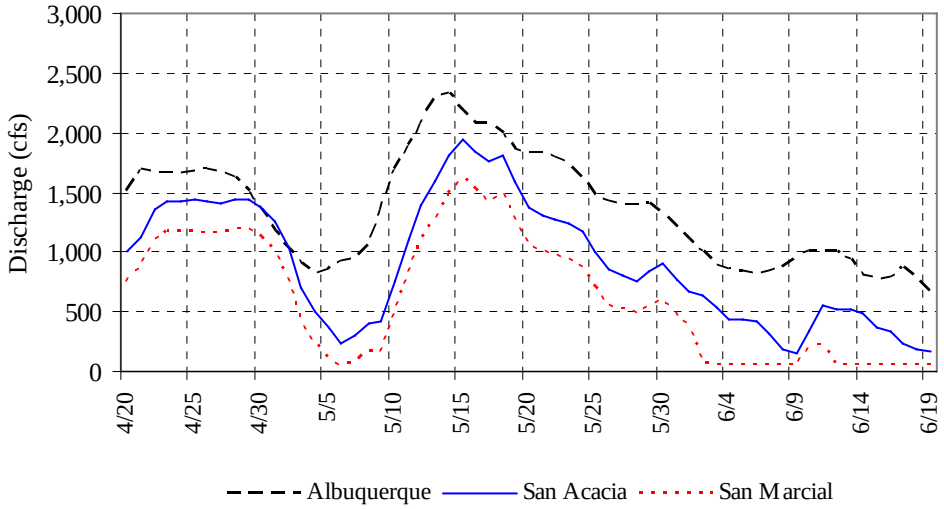

Figure 1. Streamflow forecast (URGWOM modeling results).

2.02. NO-ACTION ALTERNATIVE

Under the no-action alternative, temporary storage of native Rio Grande water at Cochiti Lake for later release to facilitate downstream recruitment flows would not occur. The dam would be operated to safely pass inflow according to the existing water control plan (USACE 1996). The change in surface elevation of the lake would be less than two feet due to the slight discrepancy in matching actual inflow and release.

The U.S. Bureau of Reclamation (Reclamation) acquires and maintains a pool of Supplemental Water (USBR 2006b) that is used to meet spawning and target flow requirements in the 2003 Biological Opinion for water operation (USFWS 2003a). The availability of water from willing sellers has decreased over the past few years. If the U.S. Fish and Wildlife Service determines that augmentation of native Rio Grande flows to provide sufficient spawning/recruitment opportunities is necessary and the highest priority need (recognizing the limited Supplemental Water supply), then Reclamation would discuss this request with the Service.

2.02. PROPOSED ACTION

In March 2007, the Engineer Advisers to the Rio Grande Compact Commission requested that the Corps be prepared to deviate from normal operation of its reservoirs to facilitate spawning recruitment flows for the endangered Rio Grande silvery minnow in the Middle Rio Grande during the spring of 2007, if needed (see Appendix B). Beginning approximately May 2, the Corps is proposing to temporarily store up to 10,000 acre-feet of water in the flood control space at Cochiti Lake. Water would be released in a manner to provide a spawning/recruitment flow of 2,500 to 3,000 cfs for 7 to 10 days at Albuquerque. It is anticipated that the release of the stored water would occur in mid-May through early June, and would range from 50 to 750 cfs over 8 to 12 days.

The commitment to facilitating recruitment flows stems from Endangered Species Act consultation with the U.S. Fish and Wildlife Service. In March 2003, the Service issued the *Biological and Conference Opinions on the Effects of Actions Associated with the Programmatic Biological Assessment*

of Bureau of Reclamation's Water and River Maintenance Operations, Army Corps of Engineers' Flood Control Operation, and Related Non-Federal Actions on the Middle Rio Grande, New Mexico (USFWS 2003a). The Reasonable and Prudent Alternative of the Biological Opinion requires, in part, that the Corps and Reclamation, annually provide an increase in flows to cue spawning of the Rio Grande silvery minnow.

Storage would only occur when native flows exceed downstream irrigation demands. Storage would occur on the ascending limb of the runoff hydrograph and would be released at the expected peak of runoff. The Rio Grande Compact Commission has approved temporary storage beginning four to five days before Rio Grande Compact Article VII restrictions are in place, which is expected to occur approximately May 7. (Article VII of the Compact prohibits most irrigation storage in upstream reservoirs when Elephant Butte Lake contains less than 400,000 acre-feet of useable water.) All water stored under this proposal but not needed to meet the spawning and recruitment flows would be completely evacuated from Cochiti Lake no later than June 15 to assure its downstream delivery to Elephant Butte Lake. Losses due to evaporation during temporary storage at Cochiti Lake have been estimated to range from 160 to 200 acre-feet. The Bureau of Reclamation has stated that this loss would be offset using Supplemental Water.

Cochiti Lake would increase approximately seven feet in elevation starting May 2. Depending on actual flow conditions, water may be held in storage for 5 to 15 days prior to its release. Figure 2 depicts the expected surface water elevation at the reservoir according to modeling results from the April 1 streamflow forecast. Figure 3 illustrates the expected inflow and outflow rates at Cochiti Lake. Depending on actual flow conditions, the release of stored water from the reservoir may occur several days later than depicted.

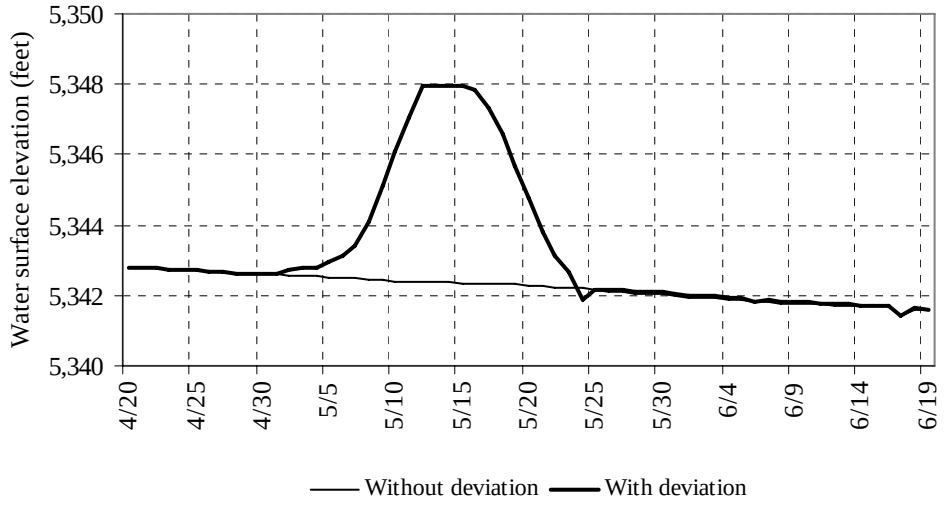

Figure 2. Expected surface water elevation at Cochiti Lake.

Figure 3. Expected inflow and outflow rates at Cochiti Lake.

The Corps may evacuate the described temporary pool or any portion thereof as necessary for flood control purposes, in accordance with the Project's authorization. The Corps further reserves the right to take such measures as may be necessary to preserve life and property, including being able to meet emergency situations or to permit maintenance or repair of the dam or appurtenant structures. Regulation and releases will be accomplished with the Corps service gates and the Corps will not be liable or responsible for any loss of stored waters due to any malfunction of the service gates.

As discussed above, the predicted runoff in the Middle Rio Grande may be sufficient to successfully provide spawning and recruitment flows for the minnow; however, even a slight decrease in actual runoff volume could necessitate the need for augmentation. The Corps has proposed this water control deviation to temporarily store water in order to be fully prepared if the need arises, and to assure spawning and recruitment flows in 2007. Based on modeling results using the April 1 streamflow forecast, the expected discharge at downstream locations is shown in Figure 4. The actual schedule of releases from Cochiti Lake would be coordinated during routine morning conference calls among Middle Rio Grande reservoir operators and stakeholders.

All Cochiti Dam and Lake Project facilities and a major portion of the flood control pool, lie within the bounds of the Pueblo de Cochiti. A Mutual Understanding Agreement for temporary storage has been signed by the Pueblo and the Corps (see Appendix B). If the planned action is successful in 2007, the Pueblo and the Corps would evaluate the potential for future implementation of recruitment flow augmentation.

The Corps and the Pueblo de Cochiti would monitor inundation at Cochiti Lake and White Rock Canyon during temporary storage. Spawning and subsequent population levels of the Rio Grande silvery minnow would be documented through an established monitoring program.

Pursuant to Corps regulation, the Albuquerque District has requested approval of the proposed water control deviation from the Corps' South Pacific Division (see Appendix D). This final Environmental Assessment and a *Finding of No Significant Impact* signed by the District Commander will be included in the final submittal for approval. The period of the planned deviation is from the date of approval through June 15, 2007.

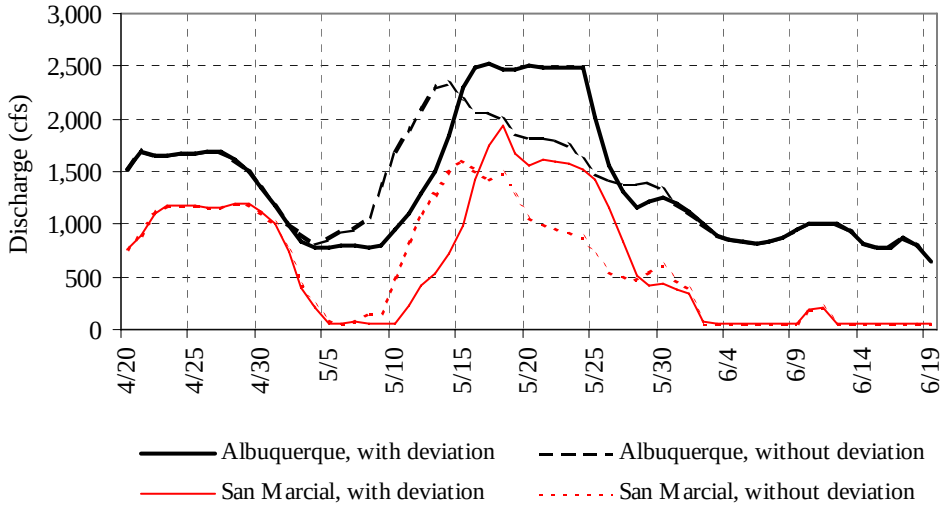

Figure 4. Hypothetical use of temporarily stored water to enhance recruitment flows.

2.03. ALTERNATIVES ELIMINATED FROM FURTHER CONSIDERATION

The Corps initially evaluated alternative locations for the temporary storage of water for facilitating recruitment flows. Storage at Jemez Canyon Reservoir was eliminated from further consideration because snowmelt runoff from the Rio Jemez watershed typically peaks before the Rio Grande. In the time necessary to complete compliance procedures and receive approval of the deviation request, the volume available for storage on the Rio Jemez would likely be small.

Abiquiu Reservoir was eliminated from further consideration because of storage space limitations and ongoing upstream storage of Rio Chama flows. Reclamation is in the process of storing flows upstream in El Vado Reservoir for the Middle Rio Grande Conservation District and Prior and Paramount water for Pueblos. Reclamation also is moving San Juan-Chama water from Heron Lake to Abiquiu Reservoir at the present time. The current conservation storage space in Abiquiu Reservoir is expected to be full. The additional storage of 10,000 acre-feet of water for recruitment flows would raise the pool above the current limit of storage easements (6,220 feet above mean sea level).

Because the Rio Compact Commission request for planned deviation was directed to the Corps, El Vado Reservoir — operated by Reclamation — also was eliminated as an alternative storage location.

3. EXISTING ENVIRONMENTAL SETTING

3.01. COCHITI DAM AND LAKE PROJECT

The Cochiti Dam and Lake Project is located on the mainstem of the Rio Grande, about 50 miles north of Albuquerque (Figure 5). The dam spans both the Rio Grande and the Santa Fe River near their confluence. The Flood Control Act of 1960 (Public Law 86-645; see Appendix A) authorized the construction of Cochiti Dam for flood and sediment control. In 1964, Public Law 88-293 (see Appendix A) authorized the establishment of a permanent pool for the conservation and development of fish and wildlife resources and recreation purposes. The 1,200-acre (approx. 50,000 acre-feet) permanent pool was created, and is maintained, by allocations from the San Juan-Chama Project (trans-mountain diversion). Construction of Cochiti Dam began in 1965 by the Corps and the project was put in operation in 1975.

The dam's spillway crest and the top of the flood control pool space (approximately 582,000 acre-feet) is at an elevation of 5,460.5 feet[1]; and the maximum pool elevation is at 5,474.1 feet (approx. 718,000 acre-feet). The current elevation of the permanent pool (approx. 50,000 acre-feet) is 5,340.2 feet. Between 1975 and 2003, Cochiti Lake has retained approximately 30,760 acre-feet of sediment. The current sediment reserve volume is approximately 78,000 acre-feet.

Cochiti Dam is operated by the Corps within the authority of Public Laws 86-645 and 88-293. Reservoir releases are restricted to the maximum non-damaging capacity of the downstream channel as measured at Albuquerque, approximately 7,000 cfs (USACE 1996). When inflow would exceed the channel capacity of the Rio Grande downstream, flood control storage is initiated. Floodwaters are stored only for the duration required and are evacuated as rapidly as downstream conditions permit. Operation of Cochiti Dam for flood control is coordinated with the Corps' Abiquiu, Jemez Canyon and Galisteo dams in order to regulate for the maximum safe flow at Albuquerque (7,000 cfs). Public Law 86-645 states that deviations in operation must be approved by the Rio Grande Compact Commission.

Flood storage is normally associated with snowmelt runoff during April through June. Summer flood storage is generally the result of short-term, high intensity thunderstorm events. The maximum water storage to date has been 396,167 acre-feet (water surface elevation 5,434.5 feet), which occurred in 1987. This volume included the permanent pool and flood control storage pools.

Flowage easements for flood control were obtained in a series of agreements beginning in 1965. Currently, the flood control pool includes approximately 4,609 acres of the Pueblo de Cochiti, 8,236 acres of the Santa Fe National Forest, 361 acres of Bandelier National Monument, and 345 acres of Los Alamos National Laboratory. The Corps holds fee title to 139 acres within the flood pool (USACE 1996). The flood pool, if inundated, would extend approximately 22.6 miles upstream from the dam.

The majority of the permanent pool creates the large lake visible from the dam. Approximately 2.3 river-miles upstream, the permanent pool also inundates the Rio Grande channel within White Rock Canyon to a point approximately 11.4 river-miles from the dam, ending approximately 1.1 miles downstream from Frijoles Canyon in Bandelier National Monument.

[1] All elevations in this document indicate feet above mean sea level, NGVD, 1929 datum.

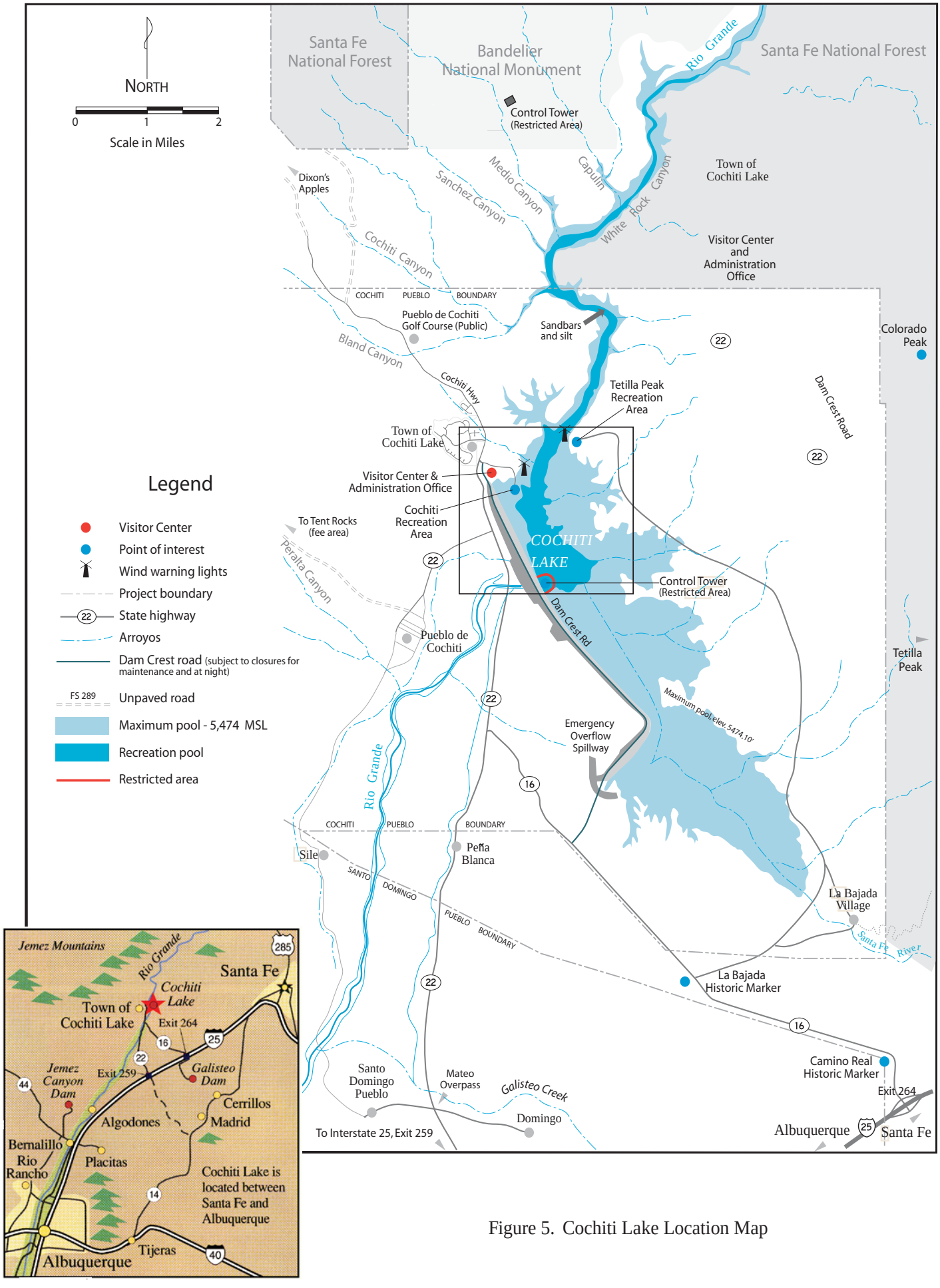

Figure 5. Cochiti Lake Location Map

3.02. PHYSICAL ENVIRONMENT

The Cochiti Dam and Lake Project is located in the northern part of the Mexican Highland Section of the Basin and Range Physiographic Province (Fenneman 1931). Cochiti Dam is near the southern end of the Española Basin, which includes the Rio Grande Valley from the vicinity of the Rio Chama confluence southward to where the Rio Grande exits White Rock Canyon along the southeast slope of the Jemez Mountains. From this point southward to the Big Bend reach in Texas, the Rio Grande Valley is fairly broad with extensive floodplains and a reduced gradient.

Soil material in the bed of the Rio Grande and Cochiti Lake is alluvial in origin. The deepest (approximately 80 feet) area of sediment deposition is near the southern end of White Rock Canyon, and depth decreases upstream. Sediment accumulation within the main body of Cochiti Lake amount to a few feet.

Ildefonso very stony loam is the principal soil series on the slopes of White Rock Canyon. This well-drained soil is forming in alluvium and coluvium, and is derived principally from basalt. Permeability of this soil is high, and available water capacity is low. Runoff is rapid and the hazard of water erosion is moderate (NRCS 1999).

3.03. CLIMATE

The climate of north-central New Mexico can be generally characterized as semi-arid continental, with mild summer and cold winter temperatures. The average precipitation for the area is approximately 10 inches per year, and about 70 percent of this moisture falls during the warmer months of the year (June, July, and August). Summer moisture is carried into the state by southerly and southeasterly air circulation from the Gulf of Mexico and is usually released in brief, often intense thunderstorms. An average of 50 such storms occur in the area each year. Winter moisture is carried into the state by eastward-moving storms from the Pacific Ocean and is often blocked from reaching the project area by the Jemez Mountains and other mountain ranges to the north and west. Snowfall (averaging 7.4 inches annually) that does reach the project area is generally of short duration.

Temperatures in the area are influenced both by elevation (approximately 5,200 to 5,400 feet above sea level) and the highly variable topography of north-central New Mexico. Cold air draining from the Jemez Mountains is often directed into the project area through White Rock Canyon during the colder months, resulting in somewhat lower temperatures during the winter than might be expected at this elevation. The mean annual temperature is close to 50 degrees F, and usually only about 11 days per year reach 90 degrees F. Most days in November through March have freezing temperatures, but only rarely during winter does the temperature fall to zero degrees F.

Winds in the area are predominantly from the west-southwest during the spring (when strongest) and shift to the north-northwest during the rest of the year. Average wind speeds are approximately 12 miles per hour, increasing to 25 miles per hour or greater about 5 percent of the time. Annual sunshine is nearly 75 percent of the total possible and is important during the summertime in the generation of localized winds and storm systems in the project area.

3.04. LAND USES

Lands surrounding Cochiti Lake on Pueblo de Cochiti land are devoted to residential and agricultural (cropland, irrigated and non-irrigated livestock pasture) uses. The Tetilla Peak and Cochiti Recreation Areas are within the Pueblo land easement devoted to floodwater and sediment control for the Cochiti Dam Project. The Corps/Pueblo easement area also contains much of the 1,200-acre permanent pool for

recreation and fish and wildlife enhancement. The Pueblo de Cochiti reserved the right to use all associated lands for any purposes not inconsistent with those expressly granted to the Federal Government for the facility.

Lands to the west of the dam at the town of Cochiti Lake are leased from the Pueblo by private entities and are mainly for residential and recreational uses. Properties at the town of Peña Blanca adjacent to Pueblo de Cochiti and Santo Domingo Pueblo lands are privately owned and, in general, are dedicated to residential and agricultural uses.

North of the Pueblo de Cochiti in White Rock Canyon, the permanent pool and Rio Grande channel are bordered by Santa Fe National Forest on the east, and Bandelier National Monument and Los Alamos National Laboratory property on the west. The U.S. Forest Service, National Park Service, and Department of Energy, are responsible for the management of their respective lands within the Corps' easement for all purpose other than flood control.

Farmland that is protected from conversion or other adverse effects under provisions of the Farmland Protection Policy Act (Public Law 97-98) includes lands defined as prime or unique, or that are of statewide or local importance for the production of food, feed, fiber, forage, or oilseed crops, as determined by the appropriate state or unit of local government agency or agencies. Prime farmland soil survey units within Sandoval County include El Rancho, Jocity, Peralta, Aga, Gilco, and Zia. The latter three soils are present below the dam. There are no prime farmlands within the flood pool easement of the Cochiti Lake Project.

3.05. HYDROLOGY AND WATER QUALITY

(Note: See Section 2.01 for the 2007 Middle Rio Grande snowmelt runoff streamflow forecast and URGWOM modeling results.)

The Rio Grande and Santa Fe River watersheds upstream from Cochiti Dam drain an area of more than 11,000 square miles in northern New Mexico and southern Colorado. The drainage basin lies between the Continental Divide and the Sangre de Cristo Mountains and includes several other tributary streams, including the Rio Chama, Rio Hondo, Red River, and Rio Pueblo de Taos. Snowmelt runoff from high elevations is the most significant contributor to stream flows in the basin.

Stream slopes in the highest elevations of the basin may be several hundred feet per mile, decreasing to 150 feet per mile or less in the Rio Grande Gorge, and only about 10 feet per mile in the Española Valley and White Rock Canyon. From Cochiti Dam downstream, the channel slope is only 4 to 5 feet per mile.

Prior to the construction of Cochiti Dam and other upstream dams, flood flows of 10,000 to 20,000 cfs were not rare in White Rock Canyon and downstream reaches. Present-day discharges in the Rio Grande downstream from Cochiti Dam range from a typical minimum winter flow of about 300 cfs, to spring runoff peaks that, through regulation, do not exceed 7,000 cfs at the Albuquerque gauge. This is the current safe channel capacity water control criterion that is defined in the Cochiti Lake Water Control Manual (USACE 1996).

The elevation of Cochiti Lake during the spring runoff period has reached or exceeded an elevation of 5,348 feet during 13 of the past 32 years (1975-2006). Except for exceptionally long storage periods in 1985 through 1987, this elevation has been inundated for periods of approximately 2 to 60 days between late April and the end of June. The most recent flood control storage occurred in 2005 when the lake reached an elevation of about 5,364 feet.

The New Mexico Water Quality Control Commission (2000) has designated uses and standards for interstate and intrastate streams in New Mexico (by stream segment). Cochiti Lake is designated for use as livestock and wildlife watering, warm water fishery, coldwater fishery, and primary contact. Designated uses of the main stem of the Rio Grande from Cochiti Dam downstream to the Angostura Diversion Works are irrigation, livestock watering, wildlife habitat, secondary contact, coldwater fishery, and warm water fishery. State water quality standards do not apply to tribal lands.

Executive Order 11988 (Floodplain Management) provides Federal guidance for activities within the floodplains of inland and coastal waters. Preservation of the natural values of floodplains is of critical importance to the nation and the State of New Mexico. Federal agencies are required "to ensure that its planning programs and budget requests reflect consideration of flood hazards and floodplain management." The proposed work would not contribute to or result in any additional development of the Rio Grande floodplain or the shoreline of Cochiti Lake.

3.06. BIOLOGICAL RESOURCES

Plant Communities

The project area is located within the Great Basin Conifer Woodland and the Plains and Great Basin Grassland biotic communities as defined by Brown (1982). These biotic communities characterize the vegetation outside of the Rio Grande floodplain. Uplands adjacent to the Rio Grande and Cochiti Lake are vegetated by one-seed (*Juniperus monosperma*) and Rocky Mountain juniper (*J. virginiana* var. *scopulorum*), piñon pine (*Pinus edulis*), Apache plume (*Fulugia paradoxia*), rabbit brush (*Chrysothamnus depressus*), skunkbush (*Rhus tribolata* var. *tribolata*), four-wing saltbush (*Atriplex canescens*), snakeweed (*Gutierrezia glutinosa*), walkingstick cholla (*Opuntia* sp.), prickly pear (*Opuntia fragilia* var. *fragilia*), and a variety of forbs and grasses including phlox (*Phlox* sp.), groundsels (*Senecio bigelovii* var. *hallii*), asters (*Aster* sp.), grama grasses (*Bouteloua* spp.), dropseeds (*Sporobolus* spp.), muhly (*Muhlenbergia torreyia*), and western wheatgrass (*Agropyron occidentale*).

Since the closure of Cochiti Dam in 1974, wetland vegetation has been developing in the lake's delta in White Rock Canyon. Currently, approximately 243 acres of wetlands occur within the reach entailing the permanent pool (NWI 2006). The extent of delta vegetation has increased 60% from the 152 acres estimated in 1993 (Allen *et al*. 1993). Flood control storage during the spring runoff period has inundated the majority of this vegetation in 5 of the 14 years between 1993 and 2006.

Vegetation adjacent to the permanent pool within White Rock Canyon consists of emergent and shrub wetland types. Emergent wetlands — entailing approximately 22 acres — are dominated by cattail (*Typha latifolia*), barnyard grass (*Echinochla crus-galli*), salt grass (*Distichlis spicata*), and inland rush (*Juncus interior*) (Allen *et al*. 1993). Shrub stands (approx. 167 acres) are dominated by coyote willow (*Salix exiguis*) ranging from less than 5-feet to about 10-feet tall. Goodding's willow (*Salix nigra* var. *gooddingii*) trees occur in some larger stands. Approximately 54 acres of mixed emergent/shrub stands occur within this reach (NWI 2006).

Executive Order 11990 (Protection of Wetlands) requires the avoidance, to the extent possible, of long- and short-term adverse impacts associated with the destruction, modification, or other disturbances of wetland habitats.

Wildlife and Fish

The following vertebrate animal species are known or expected to occur in the general area of Cochiti Lake, White Rock Canyon, and their surroundings.

Mammals known or likely to be present include little brown myotis (*Myotis lucifugus*), Yuma myotis (*Myotis yumanensis*), pallid bat (*Antrozous pallidus*), big free-tailed bat (*Tadarida macrotis*), desert cottontail (*Sylvilagus auduboni*), black-tailed jackrabbit (*Lepus californicus*), rock squirrel (*Spermophilus variegatus*), Botta pocket gopher (*Thomomys bottae*), beaver (*Castor canadensis*), western harvest mouse (*Reithrodontomys megalotis*), deer mouse (*Peromyscus maniculatus*), white-footed mouse (*P. leucopus*), piñon mouse (*P. truei*), house mouse (*Mus musculus*), meadow jumping mouse (*Zapus hudsonius*), coyote (*Canis latrans*), raccoon (*Procyon lotor*), bobcat (*Felis rufus*), badger (*Taxidea taxus*), striped skunk (*Mephitis mephitus*), mule deer (*Ococoileus hemionus*), and elk (*Cervus canadensis*) (Biella and Chapman 1977).

Hubbard and Hubbard (1979) reported a total of 154 species of birds occurring at least seasonally at Bandelier National Monument, which borders a portion of Cochiti Lake. Many, if not most, of the same species occur in the Project area as well. Common breeding species include Canada Goose (*Branta canadensis*), Mallard (*Anas crecca*), Turkey Vulture (*Cathartes aura*), Red-Tailed Hawk (*Buteo jamaicensis*), Swainson's Hawk (*B. swainsoni*), American Kestrel (*Falco sparverius*), Killdeer (*Charadrius vociferous*), Mourning Dove (*Zenaida macroura*), Greater Roadrunner (*Geococcyx californianus*), Western Screech-Owl (*Otus Kennecotti*), Great Horned Owl (*Bubo virginianus*), Belted Kingfisher (*Ceryle alcyon*), Northern Flicker (*Colaptes auratus*), Western Kingbird (*Tyrranus vociferans*), Barn Swallow (*Hirundo pyrrhonota*), Scrub Jay (*Aphelocoma coerulescens*), Black-billed Magpie (*Pica pica*), Common Raven (*Corvus corax*), American Crow (*C. brachyrhynchos*), Black-capped Chickadee (*Poecile atricapilla*), Canyon Wren (*Catherpes mexicanus*), American Robin (*Turdus migratorius*), Mountain Bluebird (*Sialia currucoides*), Western Meadowlark (*Sturnella neglecta*), Brown-headed Cowbird (*Molothrus ater*), Spotted Towhee (*Pipilo maculatus*). Common species during migration and winter includes Great Blue Heron (*Ardea herodias*), Northern Shoveler (*A. clypeata*), Ring-Necked Duck (*A. collaris*), Common Merganser (*Mergus merganser*), Sandhill Crane (*Grus canadensis*), American Coot (*Fulica Americana*), Ring-Billed Gull (*Larus pipixcan*), Dark-eyed Junco (*Junco hyemalis*), and White-crowned Sparrow (*Zonotrichia leucohhrys*).

Amphibians and reptiles known to occur in or near the project area include tiger salamander (*Ambystoma tigrinum*), plains spadefoot (*Sciaphiopus bombifrons*), Woodhouse toad (*Bufo woodhousei*), northern leopard frog (*Rana pipiens*), bullfrog (*R. catesbeiana*), painted turtle (*Chrysemys picta*), spiny softshell turtle (*Trionys spiniferus*), lesser earless lizard (*Holbrookia maculata*), eastern fence lizard (*Sceloporus undulates*), plateau whiptail (*Cnemidophorus velos*), checkered whiptail (*C. tesselatus*), western hognose snake (*Heterodon nascius*), coachwhip (*Masticophis flagellum*), glossy snake (*Arizona elegans*), common gartersnake (*Thamnophis sirtalis*), western hognose snake (*Heterodon nascius*), and western diamondback rattlesnake (*Crotalus atrox*) (Degenhardt *et al*. 1996).

Cochiti Lake is primarily a warm-water fishery consisting of northern pike (*Esox lucius*), walleye (*Sander vitrius*), black bullhead, channel catfish, common carp, white bass (*Morone chrysops*), smallmouth bass (*Micropterus dolomieui*), largemouth bass, green sunfish (*Lepomis cyanellus*), white crappie (*Pomoxis annularis*), black crappie (*Poxomis nigromaculatus*), and bluegill (Ortiz 2001). The New Mexico Department of Game and Fish occasionally performs supplemental stockings of walleye, largemouth bass, and channel catfish in the lake.

In a study of the Middle Rio Grande, Plateau Ecosystems Consulting, Inc. (2001) identified 14 fish species within the Cochiti Pueblo reach below the dam. Most common are the longnose dace (*Rhinichthys*

cataractae), rainbow trout (*Oncorhynchus mykiss*), brown trout (*Salmo trutta*), white sucker (*Catostomus commersoni*), black bullhead (*Ictalurus melas*), channel catfish (*Icalurus punctatus*), common carp (*Cyprinus carpio*), largemouth bass (*Micropterus salmoides*), river carpsucker (*Carpiodes carpio*), and bluegill (*Lepomis machrochirus*).

3.07. ENDANGERED AND THREATENED SPECIES

Three agencies have a primary responsibility for the conservation of animal and plant species in New Mexico: the U.S. Fish and Wildlife Service, under authority of the Endangered Species Act of 1973 (as amended); the New Mexico Department of Game and Fish, under the authority of the Wildlife Conservation Act of 1974; and the New Mexico Energy, Mineral and Natural Resources Department, under authority of the New Mexico Endangered Plant Species Act and Rule No. NMFRCD 91-1. State of New Mexico regulations do not apply to Pueblo and tribal lands. Each agency maintains a list of animal and or plant species that have been classified or are candidates for classification as endangered or threatened based on present status and potential threat to future survival and recruitment. Of these species, those with potential to be affected by the proposed action are discussed below.

Bald Eagle

The Bald Eagle (*Haliaeetus leucocephalus*) is a winter resident along rivers and at reservoirs in the southwestern United States. This species was listed as Federally endangered in 1967 (32 Federal Register 4001) and again in 1978 (43 Federal Register 6233), but recently was reclassified as threatened due to breeding population increases throughout the country (USFWS 1995b). The Service proposed removing the Bald Eagle from the list of endangered and threatened wildlife in July 1999 (USFWS 1999b) and reopened the comment period for this action in 2006 (USFWS 2006); however, delisting of the species has not yet occurred.

In New Mexico the Bald Eagle is a winter migrant from the northern border, and southward to the Gila, lower Rio Grande, middle Pecos, and Canadian valleys. Cochiti Lake is a key habitat area that includes winter roost and a concentration area. The lake has a large number of waterfowl from November to March and fisheries supported by the reservoir and river that provide the prey base for foraging eagles. The Bald Eagle is associated with aquatic ecosystems throughout most of its range. The typical diet of Bald Eagles is fish, with many other types of prey such as waterfowl and small mammals, depending on location, time of year, and population cycles of the prey species (USFWS 1995b). In New Mexico, these birds typically roost in groups in trees at night, usually in protected areas such as canyons (NMDGF 1988).

Both adult and juvenile Bald Eagles are present at and around Cochiti Lake between late November and early March. The Corps conducted aerial surveys for Bald Eagles between 1988 and 1996 during January, the month of highest abundance. During the 9 years of survey, Bald Eagles were present at Cochiti Lake and White Rock Canyon during all 9 years and the number of birds observed ranged from 2 to 20.

Southwestern Willow Flycatcher

The action area is within the current range of the Southwestern Willow Flycatcher (*Empidonax traillii extimus*). The U.S. Fish and Wildlife Service listed the flycatcher as endangered in February 1995 (USFWS 1995a). The flycatcher also is classified as endangered by the State of New Mexico (NMDGF 1987). The current range of the flycatcher includes Arizona, New Mexico, southern California, western Texas, southwestern Colorado, and southern portions of Nevada and Utah (Unitt 1987; Browning 1993). In New Mexico, flycatchers are known to breed in the Rio Grande, Zuni, San Francisco, and Gila river

drainages. Available habitat and overall numbers have declined statewide (USFWS 1997). A recovery plan for the flycatcher (USFWS 2002) has been completed.

Loss and modification of nesting habitat is the primary threat to this species (Phillips *et al*. 1964; Unitt 1987; and USFWS 1993b). Loss of habitat used during migration also threatens the flycatcher's survival. Large-scale losses of southwestern wetland and cottonwood-willow riparian habitats used by the flycatcher have occurred (Phillips *et al*. 1964; Carothers 1977; Rea 1983; Johnson and Haight 1984; Howe and Knopf 1991).

The flycatcher is an obligate riparian species and nests in thickets associated with streams and wetlands where dense growth of willow, buttonbush, boxelder, Russian olive, saltcedar, or other plants are present. Nests are frequently associated with an overstory of scattered cottonwood. Throughout the flycatcher's range, these riparian habitats are now rare, widely separated, and occur in small and/or linear patches. Flycatchers nest in stands with a densely vegetated understory approximately 10 to 23 feet or more in height. Surface water or saturated soil is usually present beneath or adjacent to occupied thickets (Phillips *et al*. 1964; Muiznieks *et al*. 1994). At some nest sites, surface water may be present early in the breeding season with only damp soil present by late June or early July (Muiznieks *et al*. 1994; Sferra *et al*. 1995). Habitats not selected for nesting include narrow (less than 30 feet wide) riparian strips, small willow patches, and stands with low stem density. Suitable habitat adjacent to high gradient streams does not appear to be used for nesting. Areas not utilized for nesting may still be used during migration.

Southwestern Willow Flycatchers arrive in New Mexico in late May and early June (Yong and Finch 1997). Breeding activity begins immediately and young may fledge as soon as late June. Late nests and re-nesting attempts may not fledge young until late summer (Sogge and Tibbitts 1992; Sogge *et al*. 1993).

Occupied and suitable flycatcher nesting habitat occurs within the Middle Rio Grande Valley in the 230-mile reach between Velarde and San Marcial: approximately 44 breeding pairs or territorial males were identified in 2004 surveys, approximately 30 were found in 2005 (USBR and USACE 2006) and more than 37 were know to be present in 2006 (USBR 2006a). The largest breeding concentration of flycatchers along the Rio Grande occurs at the headwaters of Elephant Butte Lake (downstream from San Marcial) where 130, 107, and 142 pairs or territorial males were present in 2004 through 2006, respectively (USBR 2006a). Occupied and suitable habitat is primarily composed of riparian shrubs and trees, chiefly Goodding's willow and peachleaf willow, Rio Grande cottonwood, coyote willow, and saltcedar. The nearest known breeding flycatchers from the study area occur along the Rio Grande near San Juan Pueblo and Isleta Pueblo, approximately 39 miles upstream and 64 miles downstream from Cochiti Dam, respectively.

As previously described, approximately 167 acres of shrub wetlands consisting primarily of coyote willow occur adjacent to the permanent pool along the Rio Grande within White Rock Canyon. At least half of this acreage is estimated to be up to 10 feet in height. Shrub stands are small (mean = 2.7 acres, median = 1.0 acre; N = 61) and scattered along a 6.5-mile reach. Six willow stands range in size from 5 to 11 acres, and a large, 42-acre stands occurs near the mouth of the canyon. Therefore, it is likely that a small portion of this area may be suitable breeding habitat for the flycatcher. Any of these willow stands could be used by flycatchers during migration.

Remoteness and limited accessibility make regular surveys for willow flycatchers very difficult in the 20-mile-long White Rock Canyon. The National Park Service has performed protocol surveys within the Bandelier National Monument portion of the canyon in 1994, 1995, 1997, and 2001. A small number of migrant, but no breeding, flycatchers have been observed during formal and informal surveys within this reach (*pers. comm.*, Stephen Fettig, Biologist, Bandelier Nat. Mon., April 2007).

Critical habitat for the flycatcher was designated throughout its range in July 1997 (USFWS 1997); however, that rule was vacated in 2001 as a result of litigation. The Service re-designated critical habitat in October 2005 (USFWS 2005); however it does not include the action area.

Rio Grande Silvery Minnow

The Rio Grande silvery minnow (*Hybognathus amarus*) formerly was one of the most widespread and abundant species in the Rio Grande basin of New Mexico, Texas, and Mexico (Bestgen and Platania 1991). At the time of its listing as endangered, the silvery minnow was restricted to the Middle Rio Grande in New Mexico, occurring only from Cochiti Dam downstream to the headwaters of Elephant Butte Reservoir, only 5 percent of its historic range (Platania 1991). The Rio Grande silvery minnow was listed as federally endangered under the Endangered Species Act in July 1994 (USFWS 1994). The species is listed by the State of New Mexico as an endangered species. The U.S. Fish and Wildlife Service (Service) documented that de-watering of portions of the Rio Grande below Cochiti Dam through water regulation activities, the construction of main stream dams, the introduction of non-native competitor/predator species, and the degradation of water quality as possible causes for declines in Rio Grande silvery minnow abundance (USFWS 1993a). A recovery plan for the silvery minnow has been completed (USFWS 1999c) and a draft revised recovery plan is currently available for public review (USFWS 2007).

Critical habitat for this species was designated in the Middle Rio Grande Valley in July 1999 (USFWS 1999a). As a result of litigation, this designation was rescinded, and the U.S. Fish and Wildlife Service re-designated critical habitat in February 2003 (USFWS 2003b). The critical habitat extends from Cochiti Dam downstream for 157 miles; however, the Pueblo lands of Santo Domingo, Santa Ana, Sandia, and Isleta are excluded. Constituent elements of critical habitat required to sustain the Rio Grande silvery minnow include stream morphology that supplies sufficient flowing water to provide food and cover needs for all life stages of the species; water quality to prevent water stagnation (elevated temperatures, decreased oxygen, etc.); and water quantity to prevent formation of isolated pools that restrict fish movement, foster increased predation by birds and aquatic predators, and congregate disease-causing pathogens.

The Rio Grande silvery minnow is a moderately sized, stout minnow, reaching 3.5 inches in total length, which spawns in the late spring and early summer, coinciding with high spring snowmelt flows (Sublette *et al*. 1990). Spawning also may be triggered by other high flow events such as spring and summer thunderstorms. This species is a pelagic (open water) spawner, producing neutrally buoyant eggs that drift downstream with the current (Platania 1995). As development occurs during the drift-which may last as long as a week depending on temperature and flow conditions- the larvae seek quiet waters off-channel; however, considerable distance can be traversed by the drifting, developing eggs (Sublette *et al*. 1990, Bestgen and Platania 1991, USFWS 1993a, Platania 1995). Maturity for this species is reached toward the end of the first year. Most individuals of this species live one year, with only a very small percentage reaching age two (Sublette *et al*. 1990, Bestgen and Platania 1991, USFWS 1993a).

Natural habitat for the Rio Grande silvery minnow includes stream margins, side channels, and off-channel pools where water velocities are lower than in the main channel. Areas with detritus and algal-covered substrates are preferred. The lee sides of islands and debris piles often serve as good habitat. Stream reaches dominated by straight, narrow, incised channels with rapid flows would not typically be occupied by the Rio Grande silvery minnow (Sublette *et al*. 1990; Bestgen and Platania 1991).

Past actions have reduced the total habitat from historic conditions and altered habitat conditions for the Rio Grande silvery minnow. Narrowing and deepening of the channel, lack of side channels and off-channel pools, and changes in natural flow regimes have all adversely affected the Rio Grande silvery

minnow and its habitat. These environmental changes have degraded spawning, nursery, feeding, resting, and refugia areas required for species survival and recovery (USFWS 1993a). In addition, flood control and diversion dams block upstream migration and restrict the species' redistribution. The coarser substrate, deeper channel, and higher velocities that occur in the incised channel downstream of the Cochiti Dams do not provide the conditions where large numbers of Rio Grande silvery minnows are known to occur.

The Rio Grande silvery minnow does not occur within 25 miles upstream and downstream from Cochiti Dam (Plateau Ecosystems Consulting, Inc., 2001). The entire existing population occurs in the Rio Grande 25 to 135 miles downstream from the dam.

Since it was listed as endangered in 1994, the silvery minnow population gradually declined through 2003 (also a extended period of drought conditions in New Mexico). During 2004 and 2005, the population increased nearly to its size at the time of listing in response to sustained flows of both moderate and exceptional discharge in the middle Rio Grande (see Figure 6). In 2006, despite the relatively high population levels, spawning and the subsequent development of young fish was poor, and the population index decreased by nearly a magnitude (Dudley and Platania 2007).

The silvery minnow population index (based on standard sampling methodology at 20 locations) has been found to be positively correlated to peak annual discharge within the Middle Rio Grande (Dudley and Platania 2007). Figure 7 dramatically illustrates this relationship from 1993 to 2006. At Albuquerque, the catch rates of minnows during October was significantly correlated ($p<0.001$) with the annual number of days that discharge exceeded 2,000 or 3,000 cfs. Similarly, the number of days that discharge exceeded 2,000 cfs at the San Marcial gauge was highly correlated ($p<0.001$) with the October catch rate. These results, along with the significant population increase observed in 2004 in response to relatively moderate spring discharges, indicate that target flows for successful silvery minnow recruitment be 2,500 to 3,000 cfs for 7 to 10 days at Albuquerque.

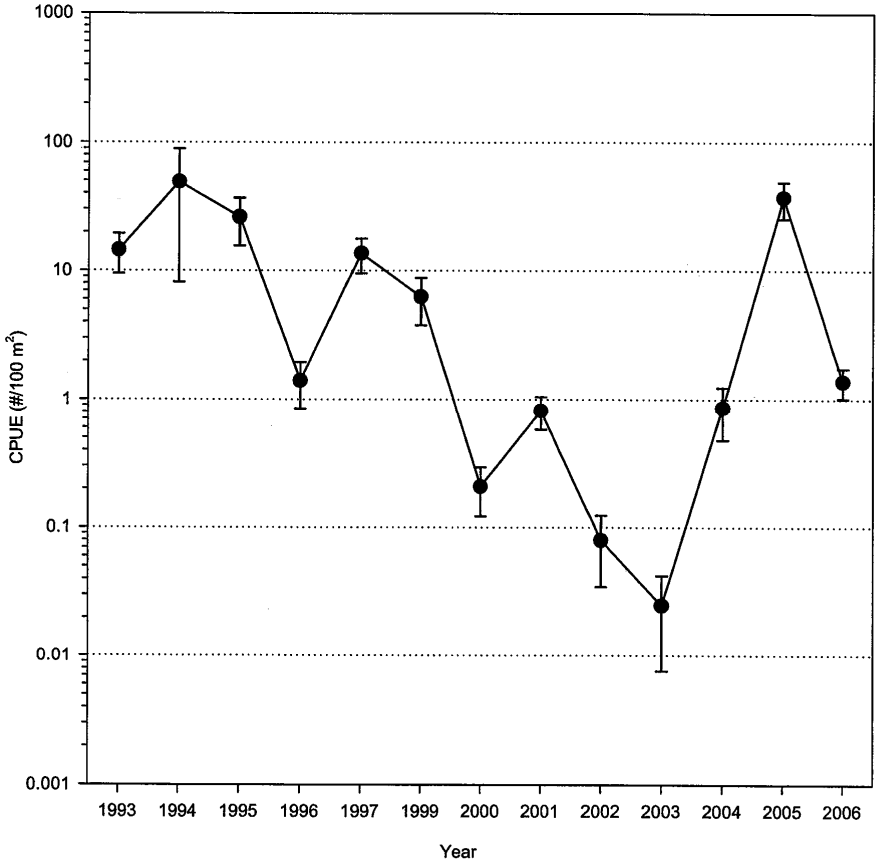

Figure 6. Rio Grande silvery minnow catch rates (catch per unit effort, CPUE) during October, 1993-1997 and 1999-2006. Solid circles indicate mean and capped-bars represent the standard error. Dotted horizontal lines represent different orders of magnitude. (From Dudley and Platania 2007.)

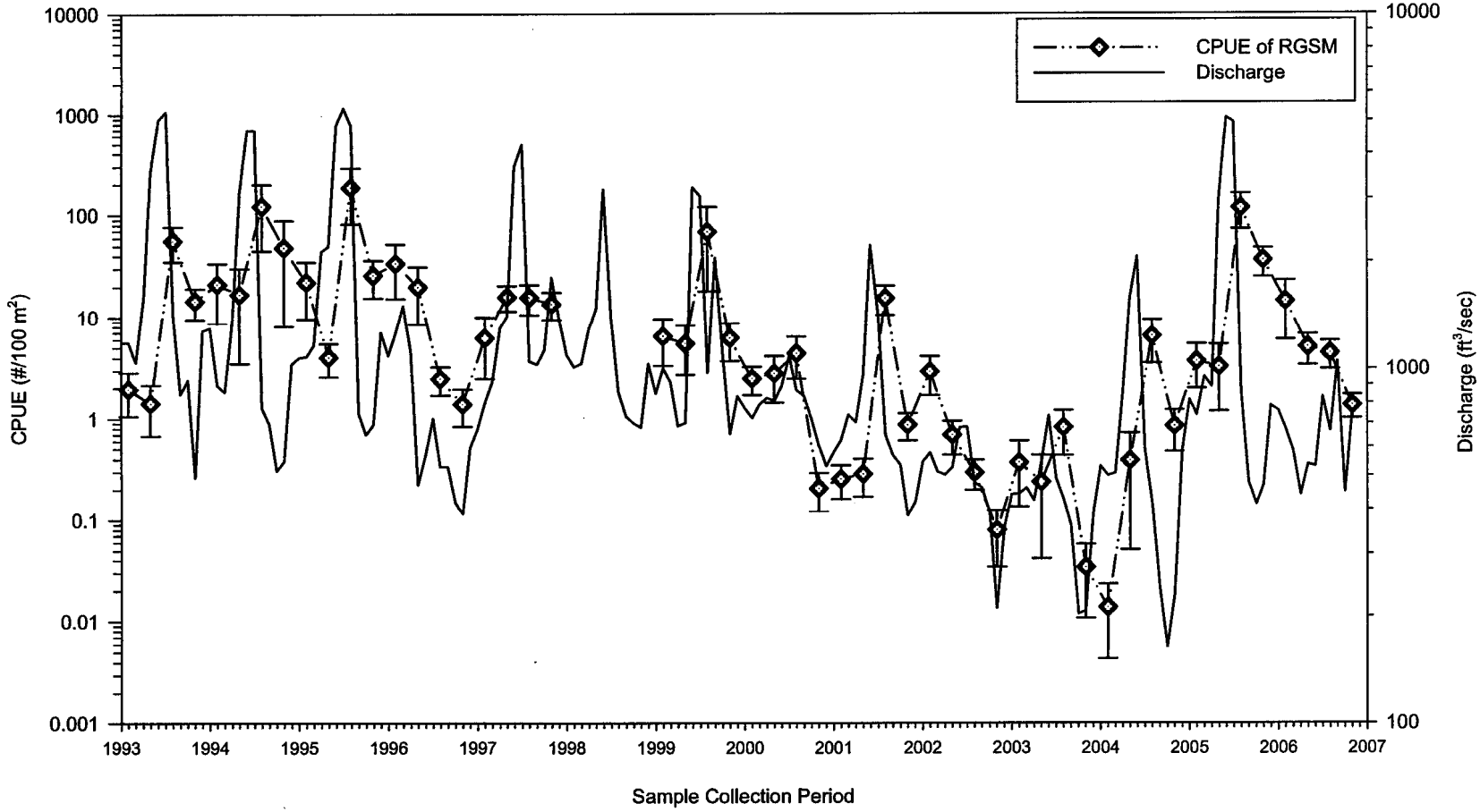

Figure 7. Time sequence of quarterly Rio Grande silvery minnow catch rates at population monitoring sites and discharge at the Albuquerque gauge. Diamonds indicate sample means for each survey and capped bars represent the stand error. (From Dudley and Platania 2007.)

3.08. CULTURAL RESOURCES

Culture History

The proposed action is within the Northern Rio Grande archaeological region. This brief cultural overview is based on the results of survey and excavation conducted by the Office of Contract Archeology for the National Park Service and the Corps in the mid-1970s, resulting in the four-volume set of archaeological research at Cochiti Dam (e.g., Biella and Chapman 1979). The approximately 12,000 years of cultural interaction in this area can be subdivided into broadly defined periods based on constellations of artifacts recovered archaeologically. Given the ecosystem of the Pueblo de Cochiti area and of the surrounding region, the artifacts associated with rather short-term resource exploitation by hunter-gathers represent the first 10,000 years. While the earliest sites, dating between approximately 10,000 B.C. and 5,500 B.C, represent the Paleo-Indian big game hunters, no sites from this time period occur in the area of the proposed project. Most Paleo-Indian sites in the greater Albuquerque region have been recorded during survey, although some excavation occurred prior to housing construction in Rio Rancho, and one site was excavated several years ago by the University of New Mexico. The range of site types identified includes tool manufacture, resource processing related to hunting and gathering and base camps occupied for longer periods of time. Many of these sites are on high ground with unobstructed views.

The Archaic Period extends from approximately 5,500 B.C. to A.D. 400 and represents a continuation of the hunting-gathering adaptation; however, the population of animals is similar to those found today. This represents the primary difference from the preceding Paleo-Indian Period. Both large and small animals were hunted and trapped. Based on the increasing presence of manos and metates, it is clear that the processing of plants became more important later in the period. Towards the end of the Archaic, longer-term habitation sites that include shallow pit houses are found in central New Mexico. Two major changes occurred towards the end of the Archaic. Indications of maize appear in the archaeological record by about 2,000 B.C.; however, maize became relatively more common after 1,000 B.C. Finally the bow and arrow appeared about A.D. 500 and replaced the spear as the primary weapon. Archaic-period sites were recorded during the 1975 archaeological survey of the pool area prior to completion of the construction of the dam.

The Archaic Period is succeeded by the Ancestral Pueblo Period. Depending on the location within New Mexico, between three and five major phases are recognized and are based on a host of characteristics, including house forms and construction techniques, settlement patterns, pottery types, and other elements of material culture. While hunting and gathering continued, reliance on agricultural products continually increased. Pit house villages with larger communal structures indicate larger social groups living in one location for longer periods of time. Small, surface living and storage rooms with below- ground communal and religious structures augment and eventually replace the pit house villages. As populations increased, these small houses were replaced with large buildings of up to several hundred rooms made of rock and/or adobe. Not all of the rooms were necessarily occupied at once.

The Developmental Period dates between A.D. 600 and 1200 and can be subdivided into Early and Late depending on the predominance of pit house or above- ground architecture. Early in the period the associated ceramics are similar to those found throughout northern New Mexico; later in time the stylistic attributes, including paint, design, and temper, become more locally diagnostic. The Coalition Period, A.D. 1200 to 1325 marked a more intensive use of the Pajarito Plateau, north of the project location. There was a change from mineral- to carbon-painted pottery and, as suggested by the number, size, and distribution of larger permanent habitation and seasonally-specific, special-use sites, there was a marked increase in the population. The Classic Period, A.D. 1325 to 1600, spans the time of the widest settlement distribution, the largest sites, and the earliest Spanish contact, beginning with the Coronado

Expedition in 1540. After several expeditions by others, the first permanent Spanish occupation in New Mexico began in 1598 near the present location of Ohkay Owingeh (San Juan) Pueblo. Glaze-painted pottery was introduced for the first time. Increasingly severe and widespread droughts and impacts from European colonizers disrupted the native populations. There was a gradual retrenchment into an aggregated settlement pattern.

The Historic Period is characterized by rapid change and acculturation between the Indians, Spanish, Mexicans, and Americans. The Period dating from about A.D. 1540 to the present can be divided into seven phases reflecting aspects of social interaction; one such scheme includes Spanish exploration, followed by Colonization, the Pueblo Revolt, Spanish and Mexican Colonial, United States Territorial, and Statehood.

Currently, there are four major linguistic groups among the Pueblo Indians of the Southwest—Zuni, Uto-Aztecan (Hopi), Tanoan, and Keres. There are seven major dialects of Keres, including the western groups of Acoma and Laguna; and the eastern groups of Santo Domingo, San Felipe, Cochiti, Zia, and Santa Ana. There are numerous opinions concerning the location of the Cochiti and Santo Domingo ancestor's prior to A.D. 1300. Based on a variety of materials recovered archaeologically, including ceramics, many believe that their ancestors originated from the general area around Mesa Verde, and the Four Corners of New Mexico, Colorado, Arizona, and Utah. After leaving the four-corners region, the Keresan ancestors of Cochiti and Santo Domingo may have moved through the Puerco River area and the Jemez Mountains, including the Frijoles Canyon vicinity. There is general agreement that many Keresan ancestors lived in the Galisteo Basin particularly in and around the region of turquoise deposits and San Marcos Pueblo (Akins 1993).

Archaeological Survey

The intensive archaeological survey for the Cochiti Reservoir was conducted in two stages in early to mid-1975. The first area to be surveyed was the permanent pool, and the second was the flood control pool; this sequence was adopted so that any required excavations could be completed in advance of the rising water following initiation of impoundment. The standards employed for the archaeological work were up to current requirements in that the interval between the surveyors varied from 10 to 15 meters depending on terrain and vegetative cover and both archaeological sites and isolated occurrences were recorded (Biella and Chapman 1977:173-175).

A total of 325 archaeological sites were documented; 102 within the boundaries of the permanent pool and 223 in the flood control pool. Twenty of these sites were previously recorded by others. The majority of the sites are either nonstructural artifact scatters frequently associated with hearths or small one- to three-room structures with associated artifact scatters. Only one large pueblo (200 to 400 rooms) was recorded. Additional classes of sites included rock shelters, depressions, agricultural terraces, corrals, pens, and petroglyphs. Any single site location may contain remains from several temporal periods. At the time of the surveys, there were approximately 90 artifact scatters, 187 ancestral Pueblo sites, and 85 historic-period sites. There are three major periods of occupation represented by the sites: Late Archaic, 800 B.C. to A.D. 400; ancestral Pueblo, A.D. 600 to A.D. 1600; and Historic, A.D. 1540 to the present (Biella and Chapman 1977:201).

3.09. SOCIOECONOMICS

Socioeconomic resources include population and economic activity, as reflected by personal income, employment distribution, and unemployment. Some related secondary components, such as housing availability and public services, are not considered in this analysis because the action has no potential to generate measurable changes in populations that would create demand for these resources. Statistics at the

county, state, and national level will be used to describe the socioeconomic context. Sandoval County serves as the Region of Influence in which most impacts can be expected to occur, and the state and region serve as regions of comparison.

Cochiti Lake is in Sandoval County, New Mexico. The county is roughly 3,709 square miles in size, with approximately 24.2 persons per square mile. It is generally rural in character and has one minor urban center. The Town of Bernalillo and City of Rio Rancho have populations of 6,611 and 51,765, respectively, in 2000. Both communities are considered "bedroom communities" of the Albuquerque metropolitan area. The total population of Sandoval County in 2000 was 89,908 (U.S. Census Bureau 2000a). Bernalillo, the county seat, is approximately 30 miles from the site.

In 2000, Sandoval County had a per capita personal income (PCPI) of $22,247. This PCPI ranked fifth in the State of New Mexico, and was 101 percent of the State of New Mexico average of $21,931, and was 75% of the national average of $29,469. In 1990, the PCPI of Sandoval County was $14,404 and the county ranked ninth in the State. The average annual growth rate of PCPI over the past 10 years was 4.7 percent. The average annual growth rate for the State of New Mexico was 3.9 percent and for the nation was 4.2 percent (BEA 2002a,b).

The demographics at the county, state, and national levels are compared in Table 1. When compared to the national level, the population of Sandoval County has proportionately more persons of Hispanic background, while less of other minority groups, including Asian and Black. However, racial composition is similar to the state as a whole, with a higher percentage of American Indian and Alaska Native (17.2 percent compared to 10.5 percent for New Mexico). It should be noted that persons of Hispanic or Latino origin might be White or any other race. In addition, roughly 14.4 percent claimed to be of some other race, while only 5.5 percent did so at the national level. When compared to New Mexico, Sandoval County has a lower percentage of Hispanics. Consequently, the population of Sandoval County is not disproportionately composed of minority groups compared to the region, although there may be specific locations where this is not the case.

Table 1. Profile of Demographic Characteristics, Year 2000.

		Race (Percent of Total Population)*						
Geographic Area	Total Population	White	Black or African American	American Indian & Alaska Native	Asian	Native Hawaiian & Pacific Islander	Some Other Race	Hispanic or Latino (of any race)
U.S.	281,421,906	75.1	12.3	0.9	3.6	0.1	5.5	12.5
New Mexico	1,819,046	69.9	2.3	10.5	1.5	0.2	19.4	42
Sandoval County	89,908	68.1	2.2	17.2	1.5	0.2	14.4	29.4
Bernalillo (Town)	6,611	63.3	1.0	4.6	0.3	0.2	34.3	74.8
Rio Rancho (City)	51,765	82	3.4	3.4	2.1	0.3	13.1	27.7

* Percentages may add to more than 100% because individuals may report more than one race.
(Source: U.S. Census Bureau 2001a,b.)

The percentage of the population in New Mexico living below poverty (19.3 percent) is higher than for the nation (13.3 percent). Similarly, the percent of children living below poverty in New Mexico (27.5 percent) is considerably higher than the nation (19.3 percent). Poverty conditions in Sandoval County are somewhat better than the state, with 12.9 percent below poverty and 17.7 percent of children below poverty. Therefore, Sandoval County, when compared to the state, is not disproportionately low-income (U.S. Census Bureau 2000a,b).

3.10. INDIAN TRUST ASSETS

Indian Trust Assets are legal interests in property held in trust by the United States for Indian tribes or individuals. Examples of trust assets include land, minerals, hunting and fishing rights, and water rights. The United States has an Indian Trust Responsibility to protect and maintain rights reserved by or granted to Indian tribes or individuals by treaties, statues, executive orders, and rights further interpreted by the courts. This trust responsibility requires that all federal agencies take all actions reasonably necessary to protect such trust assets.

3.11. RECREATION

Public recreation facilities have been developed at two primary areas at Cochiti Lake: the Cochiti (west shore) and Tetilla Peak (east shore) Recreation Areas. Recreation activities include camping; picnicking; cold-water fishing; sailing and boating (at "no wake" speeds); sail-boarding; swimming; sightseeing; and wildlife viewing. The highest visitation at the lake occurs during the months of April through September. Overall, there is sustained public use of the area throughout the year. The Visitation Estimation and Reporting System (VERS) utilized by the Corps defines a “visit” as the entry of one person into a recreation area or site to engage in one or more recreation activities. A “visit” is a “head count” of visitors and does not measure amount of use or length of stay.

The Visitation Estimation and Reporting System program estimates percentages of visitors participating in various activities based on a recreation use survey conducted in 1991. Visitors entering a recreation area were surveyed to document the types of recreational activities that they planned to participate in during their visit. The following are the results of the types and percentages of recreational activities that visitors planned to participate in while visiting Cochiti Lake in the months of April, May, and June:

- Sightseeing: 36.9%
- Fishing: 25.2%
- Picnicking: 22.4%
- Boating: 20.2%
- Swimming: 13.4%
- Camping: 11.6%
- Other activities: 9.3%

Public access to Santa Fe National Forest land in White Rock Canyon is very limited and no recreational facilities exist within this reach. Within Bandelier National Monument, visitors can enjoy hiking, sightseeing, and wildlife viewing within Frijoles Canyon to its confluence with the Rio Grande. Monument lands downstream from Frijoles Canyon comprise a designated wilderness area and public access for backpacking and hiking is relatively low, in accordance with National Park Service policy.

4.0. FORESEEABLE EFFECTS OF THE NO-ACTION AND PROPOSED ACTION ALTERNATIVES

In the draft Environmental Assessment for the proposed action, impacts were evaluated based on the March 1 forecast of Middle Rio Grande streamflow volume (504,000 acre-feet). The temporary storage of native Rio Grande flow was anticipated to begin as early as April 24. During the public review period of the draft Environmental Assessment, the Corps has refined the schedule for the proposed action based on the April 1 streamflow forecast volume of 470,000 acre-feet: storage is now expected to begin approximately May 2. With the exception of the initial date and the possibly shorter duration of storage at Cochiti Lake, the impact analysis that follows does not differ from that in the draft Environmental Assessment.

4.01. PHYSICAL ENVIRONMENT

The no-action and proposed action alternatives would not adversely affect geology and soils.

4.02. LAND USE

The no-action and proposed action alternatives would not adversely affect agricultural or grazing lands and practices at the Pueblo de Cochiti, or prime agricultural lands downstream from the dam.

4.03. HYDROLOGY AND WATER QUALITY

The proposed storage of native Rio Grande flow would slightly decrease downstream discharges for approximately two weeks beginning on May 2. Active storage at Cochiti Lake would only occur when native flows exceed downstream irrigation demands. Water may be held in storage for 5 to 15 days prior to its release. The timing, duration, and magnitude of storage for the proposed action is similar to past flood control storage operation at Cochiti Dam since its closure in 1974. No significant or unusual effects on the hydrology or water quality of the Rio Grande are foreseen.

Because storage would be limited to the ascending limb of the spring runoff hydrograph, the expected peak discharge would not be reduced by the proposed action. Rather, the peak discharge would be increased by approximately 250 to 500 cfs by the proposed action.

The relatively small amount (160 to 200 acre-feet) of evaporation and conveyance loss estimated for the proposed action would be offset by the equivalent release of Supplemental Water by the Bureau of Reclamation.

The no-action alternative would not affect hydrology, losses, or water quality. Should Reclamation utilize Supplemental Water from upstream reservoirs to facilitate recruitments flows, the passage of that water through Cochiti Dam and Lake would not alter the expected surface water elevation.

The no-action and proposed action alternatives would not encourage or induce floodplain development as addressed in Executive Order 11988.

4.04. BIOLOGICAL RESOURCES

The timing, duration, and magnitude of storage for the proposed action is similar to that of flood control storage activities since 1974. During April and May, vegetation is largely dormant in the relatively colder White Rock Canyon, and temporarily submerged plants would generate new growth

following the evacuation of stored water. The majority of riparian willow habitat occurs at the southern end of White Rock Canyon, and the substrate is about two feet higher than the normal water surface. Therefore, shorter willows (less than 5 feet tall) would be inundated entirely; however, the taller plants -- 5 to 10 feet tall would be half submerged. The maximum time that cottonwoods and willows would be inundated (substrate or stem) would be about 38 days (May 8 through June 14). If all 10,000 acre-feet is released for recruitment flows, the likely period of inundation is 14 days (May 8 through May 21). As in past years, inundation would not be detrimental to the growth and survival of wetland and riparian plant habitat within White Rock Canyon, as evidenced by the 60% increase in these communities since 1993. The Corps would monitor the depth of flooding in White Rock Canyon at the maximum storage level, and follow up with a site visit later in the growing season to determine plant response to the proposed temporary inundation.

Terrestrial wildlife species utilizing plant communities bordering the Rio Grande would be temporarily displaced from these communities by inundation during the planned deviation. Again, this short-term (10 to 20 days) effect would be no different from that of the existing flood storage regime.

Under the proposed action, aquatic species (e.g., waterfowl and fish) would have greater access to inundated areas and food resources than under the no-action alternative.

4.05. ENDANGERED AND THREATENED SPECIES

Wintering Bald Eagles leave central New Mexico for northern breeding in early to mid-March. The proposed action would have no effect on the threatened Bald Eagle.

The proposed action could displace migrant Southwestern Willow Flycatchers from the 11-mile reach of increased inundation. Suitable foraging habitat and cover exists immediately upstream and downstream from the inundated reach. It is the Corps' determination that the proposed action may affect, but would not adversely affect, the endangered Southwestern Willow Flycatcher. Designated Critical Habitat for the flycatcher does not occur within the action area at Cochiti Lake.

The proposed action may affect, but would not adversely affect the endangered Rio Grande silvery minnow. Rather, the species is expected to directly benefit from the increased spawning and recruitment potential provided by augmented flows in the Middle Rio Grande. Similarly, the proposed action would not adversely modify designated Critical Habitat for the minnow downstream from Cochiti Dam, but would improve aquatic habitat conditions due to the timely increase in discharge. The Service has concurred with the Corps' determinations of effects on listed species and designated critical habitat (see Appendix B).

4.06. CULTURAL RESOURCES

The proposed short-term storage of 10,000 acre-feet in the flood control pool and its schedule of release would impact no new land. The volume of water involved in the planned deviation would increase the elevation of the lake surface by approximately seven feet. The change would be from the top of the permanent pool, 5,341 feet above sea level, to 5,348 feet above sea level. This seven-foot increment has been at least partially flooded 23 times out of the last 32 years (1975 to 2006), including three years in which the water elevation was continuously above 5,413 feet. It was continuously under water from 1996 through the spring of 1999. The record elevation is 5,435 feet during the 1987 season. A total of seven sites were recorded during the 1975 survey between elevation 5,341 feet and 5350 feet above sea level, and one of these sites, LA 5011, was excavated (Biella, Enloe, and Eck in Biella 1979:43-54).

The seven sites recorded in the affected elevation increment include: five ancestral, or possible ancestral, Pueblo sites: LA 5011, LA 5012, LA 13042, LA 13312, and LA 13319; one lithic scatter of unknown cultural affiliation, LA 5350; and a single masonry room also of unknown cultural affiliation, LA 13301 (Biella and Chapman 1977:209-223). In keeping with the agreements between the Corps, the National Park Service (NPS), and the State Historic Preservation Officer (SHPO), LA 5011 was excavated, as noted. The other sites were not considered for excavation. Given the shallow depth of the sites (10 to 30 cm), slopes that vary from 5 percent to 27 percent, the loosely consolidated soil, and the repeated inundation with shoreline erosion resulting in stepped benches, these sites no longer retain sufficient integrity to warrant additional archaeological investigation.

The mitigation of effects to archaeological sites in both the permanent pool and the flood control pool was the result of consultation between the NPS, the Corps, and the SHPO. The proposed action is within the activities anticipated prior to dam construction and the consultation. The mitigation of effects was completed with the publication of the reports of survey, excavation, and analyses referenced above. The proposed action would not raise the water level higher than that which was planned for the original flood-control pool. The authorized purposes of the dam are flood and sediment control, recreation, and development of fish and wildlife resources. The proposed action conforms to these authorized purposes; therefore, there is no need to further consult concerning impacts to historic properties. The planned action will have no adverse effects on any archaeological resource.

The Pueblo de Cochiti is an active partner in this project, and it would only occur with the express consent of the Pueblo. In April, the Pueblo and the Corps signed a Mutual Understanding Agreement for the proposed temporary storage at Cochiti Lake. (see Appendix B). Consistent with the Departments of Defense's American Indian and Alaska Native Policy, signed by Secretary of Defense William S. Cohen on October 28, 1998, and based on the State of New Mexico, Indian Affairs Department's 2007 Native American Consultations List, the tribes with interest is activities in Sandoval County were contacted regarding this proposed project (see Appendix B). To date no responses have been received.

4.07. SOCIOECONOMIC RESOURCES

The no-action and proposed action alternatives would have no impacts to socioeconomic conditions in the action area or the region.

4.08. ENVIRONMENTAL JUSTICE

The planning and decision-making process for actions proposed by federal agencies involves a study of other relevant environmental statutes and regulations, including Executive Order 12898, Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations. The essential purpose of EO 12898 is to ensure the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies. Fair treatment means that no groups of people, including racial, ethnic, or socioeconomic groups, should bear a disproportionate share of the negative environmental consequences resulting from industrial, municipal, and commercial operations or the execution of federal, state, tribal and local programs and policies.

Also included with environmental justice are concerns pursuant to EO 13045, Protection of Children from Environmental Health Risks and Safety Risks. This EO directs federal agencies to identify and assess environmental health and safety risks that may disproportionately affect children under the age of 18. These risks are defined as "risks to health or to safety that are attributable to products or substances that the child is likely to come into contact with or ingest."

The proposed action area is within a Native American pueblo and county with a relatively high Hispanic population. As described previously, no suitable alternative locations for storage were identified within the Rio Grande basin. The effects of the proposed action are similar in type, extent and magnitude as those associated with flood control storage activities.

No increased risk to the health and safety of citizens or children are inherent in the no-action and proposed action alternatives.

4.09. INDIAN TRUST ASSETS

The proposed action has been closely coordinated with the Pueblo de Cochiti, and will not be implemented without the written agreement of the Pueblo. The no-action and proposed action alternatives would not adversely affect Indian trust assets.

4.10. RECREATION

As is the case with flood control storage, the proposed action would necessitate the closure of certain recreational facilities. The swimming beach along the western shore will be inundated for the duration of storage and would be closed to the public for safety reasons for approximately eight weeks. Two vault toilets (constructed to endure periodic inundation) would be pumped, cleaned, and closed from about May 1 through June 15. Public rest rooms would still be available on both the east and west sides of the lake. From about mid-May through early June, the Santa Cruz access road on the east side of the lake — which leads to the preferred sailboarding launch site — would be inundated and inaccessible. Both Universally Accessible Fishing Piers (one on each side of the lake) will be inaccessible from mid-May through mid-June.

The elevation of Cochiti Lake may be approximately three to five feet higher than normal during Memorial Day weekend which traditionally has the highest public visitation rate over the April through October recreation season. Lake levels have been greater than three feet above the permanent pool elevation on the Memorial Day weekend in 10 the past 32 years as a result of flood control storage.

Because inundation would only directly affect the shoreline-based activities of swimming, fishing, and windsurfing, the overall impact to recreational opportunities at the Cochiti Lake would not be significant. The Corps will advise recreational interest groups and the general public of the potential closure of facilities through advance notices in local media and through the Corp's campground reservation system.

4.11. CUMULATIVE EFFECTS

The National Environmental Policy Act defines cumulative effects as "…the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions."

Over the past several years, extensive efforts have been made towards the survival and recovery of endangered species in the Middle Rio Grande valley. Actions that focus on the Rio Grande silvery minnow include provision of water for meeting target flows (USACE 2001, USBR 2006b); breeding and rearing facilities; salvage operations; and completed and proposed habitat improvement projects. The proposed deviation in the operation of Cochiti Dam would have a positive impact on the environment and recovery of the silvery minnow the potential cumulative effects of other Federal and non-federal agencies, pueblos and non-profit groups.

5. PREPARATION, COORDINATION AND PUBLIC REVIEW

5.01. PREPARATION

This Environmental Assessment (EA) was prepared by the U.S. Army Corps of Engineers, Albuquerque District. The Product Delivery Team and principal preparers included:

William DeRagon - Biologist
Don Gallegos - Hydraulic Engineer
Ronald Kneebone, Ph.D. - Tribal Liaison
Craig Lykins – Senior Park Ranger, Cochiti Lake
April Sanders - Project Manager
John Schelberg, Ph.D - Archaeologist
Mark Sidlow, P.E. - Hydraulic Engineer

Jacob Pecos, Director of the Department of Natural Resources, Pueblo de Cochiti, was instrumental in the planning and coordination associated with this action.

The Albuquerque District Independent Technical Review Team consisted of:

Gregory Everhart - Cultural Resources
Dennis Garcia, P.E. - Reservoir Control
Champe Green, CWB - Ecology and compliance
Art Maestas, P.E. - Geotechnical Engineering
Cynthia Piirto - Recreation and reservoir operation

5.02. COORDINATION AND CONSULTATION

Agencies and other entities contacted formally or informally in preparation of this Environmental Assessment included:

Pueblo de Cochiti
Coalition of Six Middle Rio Grande Basin Pueblos
New Mexico Interstate Stream Commission
New Mexico State Historic Preservation Office
Rio Grande Compact Commission
U.S. Bureau of Reclamation, Albuquerque Area Office
U.S. Fish and Wildlife Service
U.S. National Park Service, Bandelier National Monument

5.03. PUBLIC REVIEW OF THE DRAFT ENVIRONMENTAL ASSESSMENT

In accordance with Council on Environmental Quality and U.S. Army Corps of Engineers regulations for implementing the National Environmental Policy Act, the public review period for the draft EA was fifteen days (April 9-23, 2007) because of the immediate need to store water during the snowmelt runoff period. The availability of the draft Environmental Assessment was advertised in legal notices appearing daily in the *Albuquerque Journal* and the *Santa Fe New Mexican* from April 9 through 23, 2007.

The Corps formally presented the proposed action to the Coalition of Six Middle Rio Grande Basin Pueblos on April 13, 2007; and to the Tribal Council of the Pueblo de Cochiti on April 16, 2007. The proposed action was presented to the general public at two meetings in Albuquerque on April 16, 2007,

hosted by the Corps and Reclamation regarding the Annual Operating Plan for Middle Rio Grande reservoirs.

The distribution list announcing the availability of the draft EA for public review and comment included:

Alliance for the Rio Grande
American Southwest Ichthyological Research
Assessment Payers Association of the MRGCD
Boat Owners of Cochiti, Inc.
City of Albuquerque
Coalition of Six Middle Rio Grande Basin Pueblos
Cochiti Community Development Corporation
Defenders of Wildlife
HabiTech, Inc.
Los Alamos National Laboratory
Middle Rio Grande Endangered Species Act Collaborative Program
Middle Rio Grande Conservancy District
New Mexico Attorney General's Office
New Mexico Department of Agriculture
New Mexico Department of Game and Fish
New Mexico Environment Department
New Mexico Governor's Office
New Mexico Interstate Stream Commission
New Mexico Sailing Club
New Mexico State University, Department of Fishery & Wildlife Sciences
New Mexico State University, Water Resources Research Institute
New Mexico Windsurfers Association
Pueblo de Cochiti
Pueblo of Isleta
Pueblo of San Felipe
Pueblo of San Juan
Pueblo of Sandia
Pueblo of Santa Ana
Pueblo of Santo Domingo
Pueblo de Cochiti
Rio Grande Compact Commission
Rio Grande Restoration
Rio Grande Water Rights Association
Sonosky, Chambers, Sachse, Endreson & Mielke, LLP
S.S. Papadopulos & Assoc.
SWCA Environmental
Tetra Tech EM, Inc.
University of New Mexico, Biology Department
University of New Mexico, School of Law
U.S. Bureau of Indian Affairs
U.S. Bureau of Land Management, Taos
U.S. Bureau of Reclamation, Albuquerque Area Office
U.S. Department of Energy, Los Alamos Area Office
U.S. Department of Interior
U.S. Fish and Wildlife Service, New Mexico Ecological Services Field Office
U.S. Fish and Wildlife Service, Bosque del Apache National Wildlife Refuge

U.S. Fish and Wildlife Service, Dexter National Fish Hatchery
U.S. Geological Service
U.S. Geological Service, Jemez Mountain Field Station
U.S. Park Service, Bandelier National Monument
U.S. Senator Bingaman's Office
U.S. Senator Domenici's Office
USDA Forest Service Rocky Mountain Research Station
USDA Forest Service, Santa Fe National Forest
William J. Miller Engineers, Inc.

5.04. PUBLIC REVIEW COMMENTS AND CORPS RESPONSES

Comment 1: A main potential concern is the risk of impacts to woody plants in White Rock Canyon that could be inundated for as much as 7 feet for portions of up to 2 months. [USGS, Jemez Mountain Field Station]

Response: The following text has been added to the final EA: " The majority of riparian willow habitat occurs at the southern end of White Rock Canyon, and the substrate is about two feet higher than the normal water surface. Therefore, shorter willows (less than 5 feet tall) would be inundated entirely; however, the taller plants -- 5 to 10 feet tall would be half submerged. The maximum time that cottonwoods and willows would be inundated (substrate or stem) [i.e., 2-feet deep] would be about 38 days (May 8 through June 14). If all 10,000 acre-feet is released for recruitment flows, the likely period of inundation is 14 days (May 8 through May 21)." Therefore, the duration and depth of flooding is similar to flood control storage in the past, and should not adversely impact the growth and survival of woody plant species.

Comment 2: It is important to learn from these water-holding events and improve our ability to manage water at Cochiti Lake with minimal disruption (or even enhancement) of the important wetland vegetation in White Rock Canyon. A couple possible approaches: a) Recent wetland mapping in combination with isocontours of duration and depth of inundation; and, b) On-site monitoring during the event and later (late August - early September) in the growing season to assess vegetation's response to this year's water-holding event. [USGS, Jemez Mountain Field Station]

Response: a) In the on-going Cochiti Baseline Study conducted by the Pueblo de Cochiti and the Corps, we are in the process of developing precisely the capability that is recommended for GIS-based analysis of storage scenarios and their attendant impacts. For the proposed action, potential effects were determined through wetland vegetation and USGS topographic mapping, and experienced knowledge. b) The text of the final EA now clarifies that the Corps will evaluate potential effects through on-site monitoring at the peak of storage and later in the growing season.

Comment 3: To avoid deleterious inundation effects to cottonwoods in White Rock Canyon, the magnitude of any storage should be kept as small as possible. I would suggest first using the 5,000 acre-feet of anticipated storage space in Abiquiu Reservoir before undertaking any storage at Cochiti Lake. [T.H.J]

Response: At the time of the draft EA, it was anticipated that approximately 5,000 acre-feet of space would be available in the Abiquiu Reservoir conservation storage space. Currently, the conservation pool is expected to be full in early May, precluding the opportunity for additional storage for recruitment flow augmentation.

Comment 4: "With regard to the proposed action, this is an excellent federal project to assist in recovery of a listed species as outlined in the Endangered Species Act. It will also allow the agencies to assess the efficacy of such actions. To that end, I noted that there appears to be no monitoring guidelines to assess whether this activity will achieve the desired result." [Bureau of Land Management, Taos]

Response: The text has been revised to indicate that routine and long-term monitoring of Rio Grande silvery minnow spawning and recruitment would continue to be performed. These monitoring efforts are funded by the Bureau of Reclamation and the Middle Rio Grande Endangered Species Act Collaborative Program.

Comment 5: I "...have no objections to the planned lake level deviation as it will afford us more surface area to sail upon for a few weeks this spring." [member, Boat Owners of Cochiti, Inc.]

Response: Thank you for your comment.

Comment 6: [See letter below.] [New Mexico Department of Game and Fish]

Response: Thank you for your comment.

GOVERNOR
Bill Richardson

DIRECTOR AND SECRETARY
TO THE COMMISSION
Bruce C. Thompson, Ph.D.

Tod Stevenson, Deputy Director

STATE OF NEW MEXICO
DEPARTMENT OF GAME & FISH
One Wildlife Way
Post Office Box 25112
Santa Fe, NM 87504
Phone: (505) 476-8008
Fax: (505) 476-8128

Visit our website at www.wildlife.state.nm.us
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M. H. "Dutch" Salmon, Commissioner
Silver City, NM

April 20, 2007

Ms. Julie Hall, Chief,
Environmental Resources, Albuquerque District
U.S. Army Corps of Engineers
4101 Jefferson Plaza NE
Albuquerque, New Mexico 87109-3435

Re: Draft Environmental Assessment for a Temporary Deviation in the Operation of Cochiti Dam, Sandoval County
NMGF No. 11376

Dear Ms. Hall,

The Department of Game and Fish (Department) would like to communicate our support for the deviation from normal flood control operations at Cochiti Damn and Lake for the purpose of storage and release of water to facilitate spawning of Rio Grande silvery minnow downstream in the middle Rio Grande.

Thank you for the opportunity to review and comment on the Draft Environmental Assessment for a Temporary Deviation in the Operation of Cochiti Dam. If you have any questions, please contact Randy Floyd, Aquatic Habitat Specialist, at (505) 476-8091 or randy.floyd@state.nm.us .

Sincerely,

Tom Ward for Lisa Kirkpatrick

Lisa Kirkpatrick, Chief
Conservation Services Division

LK/rlf

xc: Wally Murphy, Ecological Services Field Supervisor, USFWS
Brian Gleadle, NW Area Operations Chief, NMGF
Mark Olson, NW Area Habitat Specialist, NMGF

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APPENDIX A.
Public Laws Concerning the Cochiti Dam and Lake Project

LAWS OF THE 86th CONGRESS--SECOND SESSION, July 14, 1960

[Excerpts from]
PUBLIC LAW 86-645; 74 STAT. 480
[H. R. 7634]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled, That:

TITLE II--FLOOD CONTROL

Sec. 203. The following works of improvement ... are hereby adopted and authorized to be prosecuted under the direction of the Secretary of the Army and the supervision of the Chief of Engineers...

RIO GRANDE BASIN

The project for improvement of the Rio Grande Basin is hereby authorized substantially as recommended by the Chief of Engineers in Senate Document Numbered 94, Eighty-sixth Congress, at an estimated cost of $58,300,000.

The approval granted above shall be subject to the following conditions and limitations:

Cochiti Reservoir, Galisteo Reservoir, and all other reservoirs constructed by the Corps of Engineers as a part of the Middle Rio Grande project will be operated solely for flood control and sediment control, as described below:

(a) the outflow from Cochiti Lake during each spring flood and thereafter will be at the maximum rate of flow that can be carried at the time in the channel of Rio Grande through the middle valley without causing flooding of areas protected by levees or unreasonable damage to channel protective works: *Provided*, That whenever during the months of July, August, September, and October, there is more than two hundred twelve thousand acre-feet of storage available for regulation of summer floods and the inflow to Cochiti Reservoir (exclusive of that portion of the inflow derived from upstream flood-control storage) is less than one thousand five hundred cubic feet per second, no water will be withdrawn from storage in Cochiti Reservoir and the inflow derived from upstream flood-control storage will be retained in Cochiti Lake.

(b) Releases of water from Galisteo Reservoir and Jemez Canyon Reservoir during the months of July, August, September, and October, will be limited to the amounts necessary to provide adequate capacity for control of subsequent summer floods; and such releases when made in these months, or thereafter, will be at the maximum rate practicable under the conditions at the time.

(c) Subject to the foregoing, the storage of water in and the release of water from all reservoirs constructed by the Corps of Engineers as part of the Middle Rio Grande project will be done as the interests of flood and sediment control may dictate: *Provided*, That the Corps of Engineers will endeavor to avoid encroachment on the upper two hundred and twelve thousand acre-feet of capacity in Cochiti Reservoir, and all reservoirs will be evacuated completely on or before March 31 of each year: *And provided further*, That when estimates of anticipated streamflow made by appropriate agencies of the Federal Government indicate that the operation of reservoirs constructed as a part of the Middle Rio Grande project may affect the benefits accruing to New Mexico or Colorado, under the provisions of the eighth unnumbered paragraph of article VI of the Rio Grande compact, releases from such reservoirs shall be regulated to produce a flow of ten thousand cubic feet per second at Albuquerque, or such greater or lesser rate as may be determined by the Chief of Engineers at the time to be the maximum safe flow,

whenever such operation shall be requested by the Rio Grande compact commissioner for New Mexico or the commissioner for Colorado, or both, in writing prior to commencement of such operation.

(d) All reservoirs of the Middle Rio Grande project will be operated at all times in the manner described above in conformity with the Rio Grande compact, and no departure from the foregoing operation schedule will be made except with the advice and consent of the Rio Grande Compact Commission: *Provided*, That whenever the Corps of Engineers determines that an emergency exist affecting the safety of major structures or endangering life and shall so advise the Rio Grande Compact Commission in writing these rules of operation may be suspended during the period of and to the extent required by such emergency.

(e) The foregoing regulations shall not apply to storage capacity which may be allocated to permanent pools for recreation and fish and wildlife propagation: Provided, That the water required to fill and maintain such pools is obtained from sources entirely outside the drainage basin of the Rio Grande.

LAWS OF THE 88th CONGRESS--S. 614, March 26, 1964

PUBLIC LAW 88-293
[H. R. 1232; 3194]

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled. That the proviso to subdivision (e) of the conditions applicable to the project for improvement of the Rio Grande Basin authorized by section 203 of the Flood Control Act of 1960 (Public Law 86-645; 74 Stat. 493), is hereby supplemented to authorize, for conservation and development of fish and wildlife resources and for recreation, approximately fifty thousand acre-feet of water for the initial filling of a permanent pool of one thousand two hundred surface acres in Cochiti Reservoir, and thereafter sufficient water annually to offset the evaporation from such area, to be made available by the Secretary of the Interior from water diverted into the Rio Grande Basin by the works authorized by section 8 of the Act of June 13, 1962 (Public Law 87-483, 76 Stat. 97), subject to the conditions specified in sections 8, 12, 13, 14, and 16 of said Act. An appropriate share of the costs of said works shall be reallocated to recreation and fish and wildlife, and said allocation, which shall not exceed $3,000,000, shall be nonreimbursable and nonreturnable.

Sec. 2. Nothing contained in this Act shall be construed to increase the amount heretofore authorized to be appropriated for construction of the Colorado River storage or any of its units.

[Note: Public Law 87-483 refers to the San Juan -Chama unit of the Colorado River storage project.]

APPENDIX B.
Pertinent Documents and Correspondence

RIO GRANDE COMPACT COMMISSION
COLORADO TEXAS NEW MEXICO

April 23, 2007

Lt. Colonel Bruce A. Estok
Commander
U.S. Army Corps of Engineers
4101 Jefferson Plaza N.E.
Albuquerque, New Mexico 87109-3435

RE: Approval for Deviation of Normal Operations of Cochiti Reservoir

Dear Col. Estok:

The Rio Grande Compact Commission hereby provides its unanimous advice and consent of the deviation from normal operations of Cochiti Reservoir during the spring of 2007 to provide spawning recruitment flows for the Rio Grande silvery minnow as described in the draft Finding of No Significant Impact and Environmental Assessment (EA) for this project issued April 9, 2007. It is our understanding that regulation of flow below Cochiti Dam in accordance with the deviation will occur during late April through mid-June of this year.

To accomplish the intent of the deviation, we recommend that capture of storage commence four or five days before the projected date on which Usable Water in Rio Grande Project storage is projected to fall below the 400,000 acre-feet level which triggers the storage restrictions of Article VII of the Rio Grande Compact. Previous experience indicates that the Corps and other water management agencies in the middle Rio Grande are able to predict the timing of Article VII with a high degree of certainty. In addition, we approve of the capture of storage for the purposes of accomplishing the deviation while Article VII is in effect based on the understanding that all of that water will be released for delivery to Elephant Butte Reservoir prior to mid-June at rates in excess of the demand of the Middle Rio Grande Conservancy District.

Respectfully,

Pat Gordon

Patrick R. Gordon, Commissioner for Texas

Harold D. Simpson, Commissioner for Colorado

John R. D'Antonio Jr., Commissioner for New Mexico

MUTUAL UNDERSTANDING AND AGREEMENT
Between the
PUEBLO DE COCHITI
And the
UNITED STATES ARMY CORPS OF ENGINEERS

For the purpose of benefiting the Rio Grande silvery minnow, to store up to 10,000 acre feet of water at Cochiti Lake, starting on or about May 5, 2007 and to release said stored water between late May and early June 2007; said stored water to be completely evacuated by June 15, 2007.

This agreement is pursuant to the Flood Control Act of 1948 (Public Law 858-80th Congress, Chapter 771), the Flood Control Act of 1950 (Public Law 516-81st Congress, Chapter 188) and the Flood Control Act of 1960 (Public Law 645-86th Congress, 74 Stat. 493) and is between the Pueblo de Cochiti, herein referred to as "Pueblo" and the U.S. Army Corps of Engineers, herein referred to as the "Corps."

WHEREAS, Cochiti Dam and Lake is a Corps constructed and operated facility.

WHEREAS, Cochiti Dam and Lake is located on Pueblo lands.

WHEREAS, the Rio Grande silvery minnow is listed as endangered by the U.S. Fish and Wildlife Service.

WHEREAS, the Pueblo and the Corps believe that the proposed action will have a beneficial effect on the propagation of the Rio Grande silvery minnow.

WHEREAS, the proposed action has received the advice and consent of the Rio Grande Compact Commission for deviation of normal operations of Cochiti Lake.

NOW, THEREFORE, it is agreed as follows:

1. That subject to the authorization of pertinent water resource managers, the Corps will store and release native Rio Grande Basin water (flood water) from the Cochiti Reservoir.

2. That the total volume of water stored shall equal 10,000 acre feet. Storage will begin after execution of this agreement, and the stored water shall be released between late May and early June 2007, and shall be completely evacuated by 15 June 2007.

3. That the water stored will be managed to support efforts to conserve and recover the Rio Grande silvery minnow.

4. The Pueblo and the Corps accept no responsibility for procedures or methodology used in accounting for the water stored under this agreement.

5. That the Pueblo and the Corps accept no responsibility for the seepage, leakage, evaporation, and transpiration losses of the water stored under this agreement.

6. That storage, regulation, and the releases will be accomplished with the existing service gates and that the Corps will not be liable or responsible for any loss of stored water due to any malfunction of the service gates or inspection and maintenance of the gates that may be necessary to assure the proper and safe operation of the project.

7. That the water stored under this agreement shall be considered temporarily stored.

8. That the Corps may evacuate the water stored under this agreement, or any portion thereof, as necessary to meet flood control operations or emergency situations, including but not limited to operations to permit maintenance or repair of the dam or appurtenant structures. The emergency situations discussed above specifically exclude releases for endangered or listed species emergencies.

9. That the Corps and the Pueblo will cooperate in monitoring the release of water held pursuant to this agreement. Should either party observe unanticipated adverse conditions or impacts, the parties will consult as soon as possible, and the operation shall cease pending resolution of the adverse condition or effect. The decision to resume operations contemplated by this agreement will be made jointly by the parties hereto.

10. That the Corps will continue to pursue long-term management solutions in cooperation with the Pueblo, including the study of the effects of reservoir operations on the natural, cultural and economic resources of the Pueblo entitled the Cochiti Baseline Study.

11. That the Corps and Pueblo will continue to work together in efforts to identify or clarify (a) the rights and obligations of the Corps and the Pueblo respecting operations at the Cochiti Reservoir, (b) the effects of those operations on the Pueblo de Cochiti, (c) ways in which adverse impacts upon the Pueblo from those operations can be avoided or mitigated, (d) ways in which those operations could be managed or changed, within existing authorities, to provide positive benefits to the Pueblo, (e) what legal options are available to change or improve Reservoir operations and Reservoir uses in ways that would be beneficial to the Corps, to the Pueblo, and to other interested parties, while ensuring the provision of appropriate additional compensation to the Pueblo if lawful ways can be found to authorize greater uses of the Reservoir (and waters imported there) than are permitted under existing legislation and the parties' existing Easement Agreement and any other agreements between the signatories hereto.

12. That the term of this agreement is from the date of signature by the parties until 30 June 2007, unless modified by unanimous consent of the signatories.

13. That nothing in this agreement shall affect any party's rights under New Mexico, federal or tribal law, or the parties' existing agreements, to include the Easement Agreement and Memoranda of Understanding; and that nothing in this agreement shall be construed or applied in a manner that is inconsistent with New Mexico, federal or tribal law, that will affect the obligations of the United States to the Pueblo or that will impair the rights of the Pueblo.

14. The parties agree that the deviation from the statutory flood water release schedule addressed in this Agreement is not for a flood control or sediment control purpose, but is otherwise legally authorized pursuant to the Rio Grande Basin provisions of Title II, subpart (d) of Public Law 86-645, based upon the approval of the Rio Grande Compact Commission and the concurrence of the Pueblo de Cochiti, but will not result in a sufficiently large increase in flood water storage either in quantity or duration as to require Bureau of Indian Affairs approval.

15. The parties also agree that this deviation and the increased flood water storage which will result is for one year only; and, that if such flood water release deviations and storage requests are repeated in the future, means to secure compensation to the Pueblo, as appropriate, shall be taken into account in framing such future requests.

IN WITNESS WHEREOF, the parties hereto have caused this instrument to be duly executed.

PUEBLO DE COCHITI

By Ray H. Tapia
Governor

UNITED STATES ARMY CORPS OF ENGINEERS

By
District Engineer
U.S. Army Engineer District, Albuquerque

DEPARTMENT OF THE ARMY
ALBUQUERQUE DISTRICT, CORPS OF ENGINEERS
4101 JEFFERSON PLAZA NE
ALBUQUERQUE NM 87109-3435

April 9, 2007

Planning, Project and Program Management Division
Planning Branch
Environmental Resources Section

Mr. Wally Murphy
Field Supervisor
U.S. Fish and Wildlife Service
New Mexico Ecological Services Field Office
2105 Osuna Road NE
Albuquerque, NM 87113

Dear Mr. Murphy:

In 2003, the U.S. Army Corps of Engineers (Corps) and the U.S. Bureau of Reclamation (Reclamation) formally consulted with the Service pursuant to Section 7 of the Endangered Species Act regarding the continued operation of dams within the middle Rio Grande valley of New Mexico (Consultation # 2-22-03-F-0129). In March 2003, the Service issued the *Biological and Conference Opinions on the Effects of Actions Associated with the Programmatic Biological Assessment of Bureau of Reclamation's Water and River Maintenance Operations, Army Corps of Engineers' Flood Control Operation, and Related Non-Federal Actions on the Middle Rio Grande, New Mexico* Reasonable and Prudent Alternative Element A of the Biological Opinion requires, in part, that the Corps and Reclamation, annually provide an increase in flow to cue spawning of the Rio Grande silvery minnow, if needed. Additionally, in March 2007, the Engineer Advisers of the Commission requested the Corps to be prepared to deviate from normal operations of its reservoirs to provide spawning and recruitment flows for the minnow in 2007, if needed

The Corps is proposing a temporary deviation from its normal flood control operation at the Cochiti Dam and Lake Project, Sandoval County, New Mexico. This planned deviation would entail the temporary (less than 2 months) storage of up to 10,000 acre-feet of native Rio Grande flow in this main stem reservoir. Storage of water would begin approximately April 24, 2007. All or part of the detained water would be released to facilitate spawning and recruitment flows for the endangered Rio Grande silvery minnow in the Rio Grande downstream to Elephant Butte Lake during mid-May through early June. Recruitment flow targets are 2,500 to 3,000 cubic feet per second for 7 to 10 days at Albuquerque.

Hydrologic conditions and a description of the proposed action are described in Sections 2.01 and 2.02, respectively, of the enclosed document — *Draft Environmental Assessment for a Temporary Deviation in the Operation of Cochiti Dam, Sandoval County, New Mexico.* Baseline conditions and species status are described in Section 3.07, and the Corps' final determination of effects relative to the Endangered Species Act are contained in Section 4.05.

The Corps has determined that the proposed action would not affect the threatened Bald Eagle; and may, but not adversely, affect the endangered Southwestern Willow Flycatcher and Rio Grande silvery minnow. The silvery minnow is expected to directly benefit from the increased spawning and recruitment potential provided by augmented flows in the Middle Rio Grande. Similarly, the proposed action would not adversely modify designated Critical Habitat for the minnow downstream from Cochiti Dam, but would improve aquatic habitat conditions due to the timely increase in discharge.

The Corps requests your concurrence with our determination. We will initiate annual water operation conference calls with the Service, Reclamation, and other water resource entities twice weekly starting April 23rd to coordinate the timing and magnitude of release of recruitment flows. If you have any questions or concerns, please contact me at 505/342-3281 or William DeRagon at 505/342-3358. Thank you.

Sincerely,

Julie Hall, Chief
Environmental Resources Section

Enclosure

United States Department of the Interior

FISH AND WILDLIFE SERVICE
New Mexico Ecological Services Field Office
2105 Osuna NE
Albuquerque, New Mexico 87113
Phone: (505) 346-2525 Fax: (505) 346-2542

April 23, 2007

Cons. # 22420-2007-I-057

Ms. Julie A. Hall
Chief, Environmental Resources
U.S. Army Corps of Engineers
4101 Jefferson Plaza NE
Albuquerque, New Mexico 87109-3435

Dear Ms. Hall:

Thank you for your letter of April 9, 2007, requesting concurrence on determinations made in the April 9, 2007 Environmental Assessment (EA) for a temporary deviation in the operation of Cochiti Dam under section 7 of the Endangered Species Act of 1973, as amended (16 U.S.C. § 1534 et seq.). You determined in your EA that the proposed project "may affect, not likely to adversely affect" the Rio Grande silvery minnow (*Hybognathus amarus*) (minnow), the endangered southwestern willow flycatcher (*Empidonax trailli extiums)* (flycatcher) or their designated critical habitat. The project site is located in Sandoval County, New Mexico at Cochiti Lake.

The Corps of Engineers (Corps) proposes to temporarily store up to 10,000 acre-feet of water in the flood pool at Cochiti Lake, to be released in a manner to provide a spawning/recruitment flow of 2,500 to 3,000 cubic feet per second (cfs) for 7 to 10 days at the Albuquerque gage. Storage would begin as early as April 24, on the ascending limb of the runoff hydrograph, and only when native flows exceed downstream demands. It is anticipated that the release of the stored water would occur in mid-May through early June, and would be approximately 500 cfs for 10 days. All temporarily stored water not used to meet the spawning and recruitment flows would be completely evacuated from the reservoir by June 15 to assure its downstream delivery to Elephant Butte Lake. As a result of the temporary storage, Cochiti Lake is expected to increase approximately 7 feet in elevation starting April 24.

This action is proposed pursuant to the Service's March 2003, *Biological and Conference Opinions on the Effects of Actions Associated with the Programmatic Biological Assessment of Bureau of Reclamation's Water and River Maintenance Operations, Army Corps of Engineers' Flood Control Operation, and Related Non-Federal Actions on the Middle Rio Grande, New Mexico* (USFWS 2003a). The Reasonable and Prudent Alternative of this Biological Opinion requires, in part, that the Corps and Reclamation annually provide an increase in flows to cue spawning of the minnow.

The Service recognizes that this proposed deviation is contingent upon the following:

1. A Memorandum of Agreement for temporary storage between the Corps and the Pueblo de Cochiti;
2. Approval of the Rio Grande Compact Commission; and
3. Approval of a deviation request by the Corps' South Pacific Division.

This letter is provided in advance of those documents to assure immediate water storage in the event that the necessary approvals are obtained.

We concur with your determinations for the following reasons:

Flycatcher. The proposed action may affect, but would not adversely affect the flycatcher. Small linear patches of willows that may be suitable habitat for flycatchers exist within the project area. Migrant flycatchers have been observed in recent surveys however, nesting has not been documented. With the proposed action, emergent and shrub wetland communities in White Rock Canyon may become partially inundated during late April through mid-June. Migrant flycatchers may be temporarily displaced from vegetation shorter than 5 meters (m) in height, however, taller vegetation (7-10 m) will be only partially submerged. Additionally, suitable foraging habitat and cover exists immediately upstream and downstream from the inundated reach. Because vegetation will not be completely submerged and flycatchers will be able to find suitable habitat within White Rock Canyon the effects of this the proposed temporary storage on flycatchers is expected to be insignificant and discountable.

Minnow. The proposed action may affect, but would not adversely affect the endangered minnow. Rather, the species is expected to directly benefit from the increased spawning and recruitment potential provided by augmented flows in the Middle Rio Grande. A protracted recruitment flow of greater than 3,000 cfs for 7 to 10 days is expected to improve minnow spawning and recruitment by increasing the amount of available nursery habitat during spring snowmelt.

Minnow and Flycatcher Critical Habitat. Effects to critical habitat are not expected to be adverse. Instead, increased discharge over a longer peak than might occur naturally is likely to result in beneficial effects on critical habitat.

The proposed action is likely to have a positive short-term impact on three of the four primary constituent elements (PCEs) of critical habitat for the minnow. These include backwaters, shallow side channels, pools, and runs of varying depth and velocity; substrates of primarily sand and silt; and the presence of eddies created by debris piles, pools or backwaters, or other refuge habitat within unimpounded stretches of flowing water of sufficient length (i.e., river miles) that provide a variation of habitats with a wide range of depth and velocities. The proposed action will increase the availability these critical nursery habitats for minnow eggs and larvae and enhance opportunities for minnow recruitment.

Additionally, the proposed action is expected to have a positive impact on the PCEs of flycatcher habitat by increasing the duration of higher spring flows. High flows support critical habitat elements including a riparian habitat in a dynamic successional riverine environment, and a variety of insect prey populations found within or adjacent to riparian floodplains or moist environments.

Please contact the Service to verify the above determinations are still valid if: 1) Future surveys detect listed, proposed or candidate species in habitats where they have not been previously observed; 2) the project is changed or new information reveals effects of the actions to the listed species or their habitats to an extent not considered in these evaluations; or 3) a new species is listed that may be affected by these projects.

This concludes section 7 consultation on the proposed temporary deviation in the operation of Cochiti Dam. Thank you for your concern for endangered species and New Mexico's wildlife habitats. If we can be of further assistance, please contact Jennifer Parody of my staff at the letterhead address, or at 505-761-4710.

Sincerely,

for Wally Murphy
Field Supervisor

cc:
Director, New Mexico Department of Game and Fish, Santa Fe, New Mexico

DEPARTMENT OF THE ARMY
ALBUQUERQUE DISTRICT, CORPS OF ENGINEERS
4101 JEFFERSON PLAZA NE
ALBUQUERQUE NM 87109-3435

March 27, 2007

Planning, Project and Program Management Division
Planning Branch
Environmental Resources Section

Honorable Ray Trujillo
Governor, Pueblo of Cochiti
P.O. Box 70
Cochiti Pueblo, New Mexico 87072

Dear Governor Trujillo:

The U.S. Army Corps of Engineers (Corps), Albuquerque District is planning for a deviation from the Water Control Plan and operations at Cochiti Lake, Sandoval County, New Mexico. The plan is to temporarily detain a small portion of the spring run-off in Cochiti Lake and then gradually release this water to facilitate spawning recruitment flows for the endangered Rio Grande silvery minnow. Cochiti Dam spans the Rio Grande and Santa Fe Rivers northwest of Interstate 25 and is on the Pueblo de Cochiti Reservation immediately upstream (northeast) from the Pueblo de Cochiti village. A project area map is enclosed for your convenience.

The deviation from the Water Control Plan is necessary to temporarily detain 10,000 acre-feet of water within the flood control pool. The proposed detention would begin approximately May 3, 2007. It is anticipated that the highest elevation resulting from this temporary detention would be approximately 5,354.5 feet above sea level or at least 80 vertical feet below the record of 5,434.5 feet established in 1987. Representatives from the Pueblo de Cochiti are involved in the planning and execution of this proposed action. They will conduct monitoring during the period of detention.

Detention would only occur if river flows exceed the water demands of downstream users. Water would be released in a manner to provide a spawning recruitment flow of 2,500 to 3,000 cubic feet per second (cfs) in Albuquerque. It is anticipated that the release of the detained water would occur in mid-May through early June, and would not exceed more than 500 cfs per day for 10 days. All water not needed to meet the spawning recruitment flows would be released from the reservoir by June 15, 2007. Prior to beginning detention, the Corps would complete

all necessary regulatory compliance requirements, and obtain written approval from the Pueblo de Cochiti and the Rio Grande Compact Commission. The proposed action cannot occur without the approval of the Pueblo de Cochiti.

The proposed temporary detention is similar in timing and magnitude to the normal flood control operations authorized at Cochiti Lake by the Flood Control Act of 1960 (Public Law 86-645); therefore, no significant or novel environmental effects are anticipated. At this time, there is no anticipated flood threat for the period of this detention. Should an emergency situation arise, the Corps may release the described temporary pool, or any portion thereof, as necessary for flood control purposes, or to take such measures as may be necessary to preserve life and property.

The Corps is seeking comments regarding the potential effects of the project on Indian Trust assets, traditional cultural properties, sacred sites, biological resources, or health and safety in the project area. Please provide written comments to Cheryl Fogle or John Schelberg. If you have any questions or require more information regarding the release of water from Cochiti Lake to facilitate spawning recruitment flows for the endangered Rio Grande silvery minnow, please contact me at (505) 342-3281.

Given the above average temperatures this spring, the increasing rate of snowmelt and the biological requirements of the Rio Grande silvery minnow, the Corps is expediting the environmental assessment for the proposed action. We would appreciate your response as soon as possible. Thank you for your attention to this matter.

Sincerely,

for John D. Schelberg

Julie Hall, Chief
Environmental Resources
Section

Enclosure

RIO GRANDE COMPACT COMMISSION

COLORADO TEXAS NEW MEXICO

March 2, 2007

VIA: US Postal Service and Facsimile (505) 342-3197

Bruce A. Estok
Commander
U.S. Army Corps of Engineers
4101 Jefferson Plaza N.E.
Albuquerque, New Mexico 87109-3435

RE: Rio Grande Compact Commission Engineer Adviser Request

Dear Col. Estok:

Thank you for providing your staff for the 2007 Engineer Adviser (EA) meeting. The Engineer Advisers to the Rio Grande Compact Commission (Commission) request the U.S. Army Corps of Engineers (Corps) be prepared in late April and May 2007 to deviate from normal operations of its reservoirs to provide a spawning and recruitment flow for the Rio Grande silvery minnow in the middle valley as described below.

At the EA meeting, the U.S. Fish and Wildlife Service (Service) indicated they documented spawning of silvery minnow from mid-May through mid-July 2006 but that recruitment of silvery minnow from the spawn was low. The Service indicated the high magnitude but low duration summer flows did not provide sufficient habitat for successful recruitment. Further, the Service indicated they now believe, based upon available data from the last several years, that a 7-to-10 day stable flow during mid-to-late May exceeding 2,000 to 2,500 cubic feet per second could improve silvery minnow recruitment in the middle valley.

The Service and U.S. Bureau of Reclamation indicated they have spoken with the Corps about conducting a short-term re-regulation of native flows for silvery minnow recruitment. At the EA meeting, Corps staff indicated they do not have authority to conduct such an operation on a long-term basis. However, the Engineer Advisers believe the proposed operation could be conducted in 2007 as a deviation from normal operations, if needed. Further, the Engineer Advisers note that the Corps conducted a similar operation in 2001 as a deviation.

The Engineer Advisers request the Corps provide a 7 to 10-day stable flow greater than 2,000 cubic feet per second in the middle Rio Grande downstream of Cochiti

and Jemez Canyon reservoirs during snowmelt runoff from the natural flow of the Rio Grande. This request is subject to two caveats: that the re-regulation occur from direct flow of the Rio Grande only if sufficient direct flow is available in excess of middle valley diversion demand and that deliveries of water to Elephant Butte Reservoir not be reduced by the operation. The Engineer Advisers believe the Rio Grande Compact Commission would be in favor of such a deviation.

We look forward to working with you and your staff to receive the advice and consent of the Rio Grande Compact Commission on a deviation.

Sincerely,

Estevan Lopez
New Mexico

Mike Sullivan
Colorado

Herman Settemeyer
Texas

cc: ISC Santa Fe file
ISC Albuquerque file
Susan Shampine, USACE
Mark Yuska, USACE
Brian Milsap, Service
Connie Rupp, Reclamation
Bill Ruth, Rio Grande Compact Commission
Hal Simpson, Rio Grande Compact Commission
Patrick Gordon, Rio Grande Compact Commission
John D'Antonio, Rio Grande Compact Commission
Anne-Marie Matherne, RGCC Secretary

APPENDIX C.
Riverware Modeling Assumptions

Several assumptions were made prior to running the water operations model with the April 1, 2007 forecast. The basic assumptions are summarized below.

Forecast
The April 1, 2007, 50% most probable runoff forecast volumes provided by the United States Department of Agriculture, Natural Resources Conservation Service (NRCS; excerpted below) was used in the water operations modeling.

Target Flows
Dry year/Rio Grande Compact Article VII target requirements were assumed for the water operations modeling. The type of year is defined in the Biological Opinion. According to the Biological Opinion, a dry year classification requires certain flow targets at certain locations along the Rio Grande. The Rio Grande at Central Avenue in Albuquerque must have 100 cfs throughout the entire year. Continuous flows are required all the way to San Marcial through June 15, and then sections of the river can be dried, if necessary, downstream from Isleta Diversion Dam.

Monsoon Conditions
Dry monsoon conditions were assumed for modeling.

River Recession
According to the Biological Opinion, certain sections of the Rio Grande can be dried after June 15, if necessary. The Incidental Take Statement associated with the Biological Opinion states that up to 8 miles of river can be dried per day per reach while Rio Grande silvery minnow rescue efforts can take place to salvage eggs and fish.

Recruitment Flows
In past years, recruitment flows, formerly characterized as “spawning spikes” were managed to ensure that the silvery minnow spawned so the fish population could propagate. A recruitment flow target of 2,500 to 3,000 cfs at Albuquerque for up to 10 days was included as part of the model runs.

Drought Storage
Since it was assumed that we would be operating under Article VII storage restrictions during some of the runoff period, we assumed that water would be stored under the Emergency Drought Water Agreement for Reclamation and the MRGCD.

Colorado Deliveries
Monthly delivery volumes from Colorado at the state line at Lobatos were provided by the Colorado Office of the State Engineer and were based on the NRCS April 1 forecast.

Similar Hydrologic Year
The March through July runoff volumes for the 50% exceedance forecast were entered into the forecasting model to predict the runoff. The same similar historical hydrograph was used to model the pre-forecast period (January – February) and the post-forecast period (August –December) that was determined based on the forecast period (March – July) runoff volumes. Dry monsoon conditions are anticipated this year so the post-forecast inflow hydrograph.

Rio Grande Project Demand

The Rio Grande Project demand schedules for Elephant Butte and Caballo Reservoirs were provided by Wayne Treers of the Bureau of Reclamation's office in El Paso, Texas. Project demand schedules were provided for the 50% exceedance condition based on the NRCS April 1 forecast
.

MRGCD Demand Curve

Middle Rio Grande Conservancy District irrigation operations, used in the water operations model were based on a synthetic demand schedule based on historical data.

San Juan-Chama Water

Several San Juan-Chama contractors are leasing water to Reclamation to provide supplemental water to meet minimum flow targets for the silvery minnow. The anticipated San Juan-Chama leases in Heron and Abiquiu amount to approximately 70,000 acre-feet of water.

Emergency Drought Water

Emergency Drought Water can be captured when we are under Article VII compact restrictions. Reclamation has a remainder of 4,934 ac-ft left to capture while MRGCD has approximately 11,546 ac-ft. These volumes were used in the water operations modeling. Water will only be stored after storage has taken place that will meet the needs of the Six Middle Rio Grande Pueblos.

Rio Grande Project Usable Storage

Rio Grande Project storage is the combined usable storage in Elephant Butte and Caballo Reservoirs. Rio Grande Compact Article VII storage restrictions become effective when the combined usable storage drops below 400,000 ac-ft. New Mexico credit water, Colorado credit water, and San Juan-Chama contractor water remaining in Elephant Butte or Caballo does not count as part of the usable project storage and must be subtracted from the total combined storage of the two reservoirs

New Mexico Credit Water

A volume of 180,200 ac-ft of New Mexico credit water was used in the water operations modeling scenarios.

Colorado Credit Water

A Colorado credit water volume of 16,000 ac-ft was used in the water operations modeling to.

San Juan-Chama Water in Elephant Butte

A volume of 4,500 ac-ft of San Juan-Chama water currently in storage in Elephant Butte Reservoir was used in the water operations modeling.

Prior & Paramount Storage

Preliminary discussions between Reclamation and BIA concerning Prior and Paramount (P&P) storage and operations are ongoing. Water operations were modeled so that up to a maximum of 19,000 ac-ft is stored in El Vado Reservoir for the needs of the six Middle Rio Grande Pueblos. This volume is only representative of a place holder for P&P storage and does not pre-determine any P&P operations.

NRCS Streamflow Forecasts

Excerpted from:
http://www.wcc.nrcs.usda.gov/cgibin/newbor2.pl?state=nm&year=2007&month=3&basin=22

New Mexico Basin Outlook Report for RIO GRANDE BASIN as of April 1, 2007

Streamflow Forecasts

RIO GRANDE BASIN

Streamflow Forecasts - April 1, 2007

Forecast Pt	<==== Drier === Future Conditions === Wetter ====>						
	========== Chance of Exceeding * ==========						
Forecast Period	90% (1000AF)	70% (1000AF)	50% (Most Prob) (1000AF)	(% AVG.)	30% (1000AF)	10% (1000AF)	30 Yr Avg (1000AF)
Rio Grande nr Del Norte (2)							
APR-SEP	299	365	415	78	469	558	531
Red River blw Fish Hatchery nr Questa							
MAR-JUL	21	29	35	100	41	52	35
Rio Pueblo de Taos nr Taos							
MAR-JUL	7.8	11.3	14.0	79	17.2	23	17.7
Rio Pueblo de Taos blw Los Cordovas							
MAR-JUL	13.2	22	30	75	39	55	40
Embudo Creek at Dixon							
MAR-JUL	19.4	30	38	75	48	64	51
El Vado Reservoir Inflow (2)							
MAR-JUL	114	137	155	65	173	205	237
Rio Grande at Otowi Bridge (2)							
MAR-JUL	290	385	470	62	560	720	757
Santa Fe River nr Santa Fe (2)							
MAR-JUL	1.70	2.40	3.10	67	3.90	5.20	4.60
Jemez River blw Jemez Canyon Dam (2)							
MAR-JUL	19.4	24	29	64	34	43	45
Rio Grande at San Marcial (2)							
MAR-JUL	132	200	265	46	350	505	573

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.
(1) - The values listed under the 10% and 90% Change of Exceeding are actually 5% and 95% exceedance levels.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

Excerpted from:
http://www.wcc.nrcs.usda.gov/cgibin/newbor2.pl?state=nm&year=2007&month=3&basin=26

New Mexico Basin Outlook Report for SAN JUAN RIVER BASIN as of April 1, 2007

Streamflow forecasts for the San Juan River Basin range from an average of 60 percent for La Plata River at Hesperus, to an average of 72 percent for the Rio Blanco at Blanco Diversion. March precipitation came in at 60 percent of average as compared to last year's 156 percent. Year-to-date precipitation is 93 percent of average, up from last year's 79 percent. Snowpack in the basin is 59 percent of average, about the same as last year's 67 percent. Navajo reservoir storage is 1,600,200 acre-feet as compared to last year's 1,503,400 acre-feet.

Streamflow Forecasts

SAN JUAN RIVER BASIN

Streamflow Forecasts - March 1, 2007

	<==== Drier === Future Conditions === Wetter ====>						
Forecast Pt	========== Chance of Exceeding * ==========						
Forecast Period	**90% (1000AF)**	**70% (1000AF)**	**50% (Most Prob) (1000AF)**	**(% AVG.)**	**30% (1000AF)**	**10% (1000AF)**	**30 Yr Avg (1000AF)**
Rio Blanco At Blanco Diversion (2)							
APR-JUL	33	41	48	91	55	67	53
Navajo River At Oso Diversion (2)							
APR-JUL	39	50	58	84	68	83	69

* 90%, 70%, 30%, and 10% chances of exceeding are the probabilities that the actual flow will exceed the volumes in the table.
(2) - The value is natural flow - actual flow may be affected by upstream water management.

APPENDIX D
Request for Deviation

DEPARTMENT OF THE ARMY
ALBUQUERQUE DISTRICT, CORPS OF ENGINEERS
4101 JEFFERSON PLAZA NE
ALBUQUERQUE NM 87109-3435

CESPA-OD-W (11-2-240a) 27 April 2007

MEMORANDUM FOR Commander, South Pacific Division, ATTN: CESPD-MT-E

SUBJECT: Deviation from Approved Water Control Plan for Cochiti Lake

1. We request approval of this deviation from the approved Water Control Plans in order to begin the spring runoff time-dependent actions necessary to implement the water storage provisions of the proposal. Per guidance provided in CESPD R 1110-2-8, organized per Table 1, the following information along with the single enclosure containing seven referenced attachments comprises the Deviation Request Package:

a. On March 2, 2007, the Engineer Advisors to the Rio Grande Compact Commission requested that the U.S. Army Corps of Engineers (Corps) be prepared to deviate from normal operations of its reservoirs to facilitate spawning recruitment flows for the Endangered Rio Grande silvery minnow in the middle Rio Grande during the spring runoff of 2007, if needed. (See Attachment A.) Based upon runoff timing and availability of unregulated inflow, and storage space, Cochiti Lake is the best alternative.

b. Description of the Deviation: The proposed deviation is for temporary storage and soon-to-follow release of native Rio Grande water in Cochiti Lake to supplement flows in the main stem of the Rio Grande below Cochiti and Jemez Canyon Dams for the benefit of Rio Grande silvery minnow. As part of the proposal, the Corps will establish a temporary pool for storage of up to 10,000 acre-feet at Cochiti Lake. The water would be stored on the ascending limb of the runoff hydrograph when native flows exceed downstream demands, and released at the peak and descending limb of the runoff hydrograph. Storage of the temporary pool would be in the flood pool at Cochiti Lake and would begin on or after April 27, 2007. The release of stored water would be limited to the amount necessary to provide a minimum spawning recruitment flow at the Albuquerque gage of

2,500 cfs. It is anticipated that the release of the stored water would not be more the 500 cfs per day for 10 days. Release of the stored water is expected to start in mid-May to early June. Any remaining water not needed to meet the spawning recruitment flows would be completely evacuated by June 15, 2007. The deviation would start upon your approval on or shortly after April 27, 2007 and end June 15, 2007.

c. Effect on Corps Operations: Normal operation would continue at Cochiti Lake in regards to flood and sediment control. As part of this agreement the Corps may evacuate the described temporary pool or any portion thereof as necessary for flood control purposes, in accordance with authorized project purposes. The Corps further reserves the right to take such measures as may be necessary to preserve life and property, including being able to meet emergency situations or to permit maintenance or repair of the dams or appurtenant structures. Regulation and releases will be accomplished with the Corps service gates and the Corps will not be liable or responsible for any loss of the stored waters resulting from releases made to accomplish the project's flood control purpose or due to any malfunction of the service gates or inspection and maintenance of the gates that may be necessary to assure the proper and safe operation of the projects. If all parties agree on the deviation, it is expected that the Corps will be the lead agency in making release decisions in consultation with the U.S. Fish and Wildlife Service, Bureau of Reclamation and the Rio Grande Compact Engineer Advisers.

d. Potential Flood Threat: We do not anticipate any flood threat from this operation. Less then 2% of the flood space will be needed for this deviation. If the runoff forecast increased sufficiently and flood space was needed, the water would not be stored and any currently stored would be evacuated. Therefore it does not impair the existing flood control regulation/ operation at the project.

e. Predicted change in elevation: Cochiti Lake would increase approximately seven feet starting on or after April 27, 2007 returning to unaffected elevation no later than June 15, 2007.

f. Effect on Environment: Storage of native water in Cochiti Lake is subject to compliance with the National Environmental Policy Act (NEPA). Compliance of NEPA has been accomplished with the attached EA and the Finding of No Significant Impact (FONSI). This action will not negatively affect any federal threatened or endangered species or critical habitat. A detailed description of project features and the associated environmental and cultural setting are described in the EA. Fish & Wildlife Service's (FWS) response in regards to this action is that they concur with the finding. (See Attachments B & C: Environmental Assessment and Concurrence from the FWS).

g. Effect on other agencies and individual interests: The Pueblo de Cochiti, Rio Compact Engineer Advisers, Bureau of Reclamation, Middle Rio Grande Conservancy District and FWS support this action. Storage of native water will occur only when all rights are met. (See Attachment D: The Mutual Understanding and Agreement (MUA) with the Pueblo de Cochiti).

h. Coordination: The Rio Grande Compact Commission (RGCC) has approved the storage of native water in Cochiti Lake. (See Attachment E: RGCC approval letter). The Middle Rio Grande Conservancy District and Bureau of Reclamation have been notified of the proposed operation. Coordination with the FWS and Pueblo de Cochiti has taken place and they support the proposal.

i. Alternative measures: Without adoption of this deviation, the flows below Cochiti and Jemez Canyon Dam might not be enough to ensure a spawning recruitment of the silvery minnow. An alternate solution is the use of supplemental water (San-Juan Chama water) purchased by the Bureau of Reclamation to meet the flow requirements. The Bureau would have to pay for the water and using it for spawning recruitment flows would reduce their ability to meet target flows during late June through October. There is no purchase cost for the use of re-regulated Cochiti Lake inflow. If the deviation is not adopted, Cochiti Lake will be operated to pass inflow.

j. Recommendation for a permanent change: At this time we do not recommend a change in the Water Control Plan at Cochiti Lake. This is a request to ensure that there is a spawning recruitment of the silvery minnow this year. It also allows time for the Middle Rio Grande Operations Review and ESA workgroups to address issues in the Rio Grande Basin in the long term.

k. District counsel has concurred with the District Commander's support of this deviation. (See Attachment F: Legal Opinion Memo.)

l. Recommended fees or reimbursements to the Federal Government: There are no fees associated with this action since the Corps has accepted joint responsibility for recruitment flows. Pursuant to formal consultation under Section 7 of the Endangered Species Act, the U.S. Fish and Wildlife Service issued, in March 2003, the Biological and Conference Opinions on the Effects of Actions Associated with the Programmatic Biological Assessment of Bureau of Reclamation's Water and River Maintenance Operations, Army Corps of Engineers' Flood Control Operation, and Related Non-Federal Actions on the Middle Rio Grande, New Mexico. Element A of the Reasonable and Prudent Alternative states, in part: "Between April 15 and June 15 of each year, the action agencies [Corps and Reclamation], in coordination with parties to the consultation, shall provide a one-time increase in flows (spawning spike) to cue spawning." Costs associated with this deviation are covered under existing budgeted O&M funds and no additional funding requirements are anticipated.

m. Other Pertinent Information: The Corps and Pueblo de Cochiti signed an MUA on April 18, 2007, providing the Pueblo's approval for this storage and release action for this year. Albuquerque District Geotechnical Section monitors seepage conditions at Cochiti Dam as part of normal operations. Monitoring will continue during the deviation period, and the Geotechnical Section concurs with the deviation proposal.

n. The District Commander fully supports and recommends this deviation.

CESPA-OD-W (11-2-240a) 27 April 2007
SUBJECT: Deviation from Approved Water Control Plan for Cochiti Lake

o. Quality Control Certification: (See Attachment G: Quality Control Certification.) The ITR has been completed. All responses have been discussed with the Review Team, and all issues have been resolved.

2. Your expedient review, given the relatively short timeframe, is appreciated. If you wish additional information or have questions, please contact Mr. Mark Yuska at (505) 342-3608 or Mr. Don Gallegos at (505) 342-3382.

Encl
as

B. A. ESTOK
LTC, EN
Commanding